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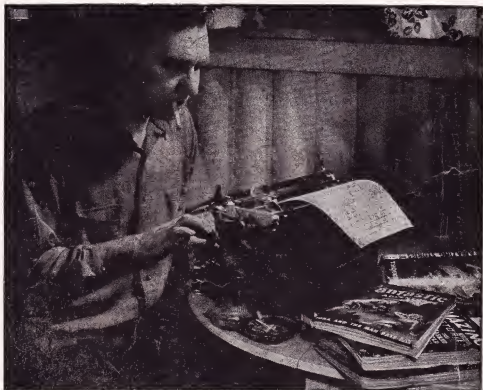


WHO SOWS THE WIND...

By **ROG PHILLIPS**

...MANKIND FLED IN TERROR FROM THIS CATAclySMIC DESTROYER!

MEN BEHIND AMAZING STORIES



Rog Phillips

Author of: "WHO SOWS THE WIND..."

MY LIFE seems to divide itself into periods, depending on what aspect of it I think of. Travel? The first fourteen years of my life were spent in Spokane, Washington where I was born. During those first fourteen years I didn't see as much as one of the many lakes near Spokane. Then

my dad got the yen to travel, auctioned off the furniture, and we were on our way to California as the first step in travels which have taken me all over the United States several times. When I was seventeen I thought nothing of hitch hiking to

(Continued On Page 160)

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.....

WHO SOWS THE WIND . . . (Novel—30,000) by Rog Phillips 8

Illustrated by Leo Ramon Summers

Because of atomic bombs, America was being innudated by the melting of polar ice caps. But here and there were a few people who refused to act as her pallbearers!

THE TWO-TIMER (Short—5,000) by H. B. Hickey 54

Illustrated by Gerald Hohns

Frankson's method for being untrue to his wife hinged on a machine that couldn't go wrong. What he forgot was that it's the human equation that can't be trusted!

"WE'LL GET YOU YET!" (Novelette—15,000) by P. F. Costello 64

Illustrated by Ogden Whitney

When a woman can't be found after weighing herself, she may only have gone off somewhere to diet. But what's a guy supposed to think if the scale disappears too?

NUISANCE VALUE (Short—3,000) by Walt Sheldon 88

Illustrated by Henry Sharp

Some day Jim Lanier will be able to tell how man-made satellites became at all possible. But even when Earth knows the truth, it won't believe it. Would you?

FLIGHT TO DISHONOR (Short—9,000) by Gerald Vance 96

Illustrated by Ogden Whitney

There were many reasons for Drake to turn traitor—reasons any man might have found irresistible. But Fate may make a hero out of us no matter what we feel

THE IMITATORS (Short novel—20,000) by Peter Worth 112

Illustrated by Leo Ramon Summers

As long as the blobs stuck to imitating Man's way of thinking, it worked out fine. But when they started trying to take on our physical appearance—Wow!

Front cover painting by Robert Gibson Jones, illustrating
a scene from "Who Sows the Wind..."

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The

OBSERVATORY

..... by the Editor

A FEW DAYS ago we received a letter from a young man who wants to take a crack at writing science fiction. Dreaming up plots for such stories, he told us, would be no strain at all for him; the only real stumbling block was his unfamiliarity with the technical words and phrases which the experienced science-fiction author tosses around with such nonchalance. Could we, the young man wanted to know, take the time to furnish him with a glossary along those lines? Or must he go back to school and collect a double handful of degrees?

SINCE WE'RE always ready to give aid and comfort to anyone seeking a. and c., we spent the better part of an afternoon working out such a list. Not that it's complete, but it is a start in that direction and would go at least part way in giving the average science-fiction or fantasy story an air of verisimilitude.

NOT UNTIL later, however, when we were trying to dredge up a springboard for this month's editorial (you've

heard how tough that job is for us), did it occur that we might put at least part of the list in *The Observatory* for the guidance of those readers just beginning to take an interest in the fiction of the future. So we now present, for better or worse, a few of the more common terms, together with their meanings.

A **ATOMIC CANNONS:** Large things that go zap.

Armageddon: A word used by people hearing a description of the horrors of the next war. Such as, "Armageddon outta here!"

Audio screen: Television without Milton Berle or wrestling.

BEM: Seen only by visitors to other worlds and drunks.

Dero: (now obsolete.) A word of endearment, meaning "little shaver".

Disintegrating ray: Something you can't see that turns something you can see into something you can't see.

Galaxy: A word that does not always mean Other Worlds.

Geiger counter: Something used to count geigers.

Interstellar space: Too much nothing at all, filled with rockets, flying saucers, advanced civilizations, space ships, and discarded copies of *Amazing Stories*.

Mars: A candy bar.

Moon: Something without which there would have been no "Destination ----."

Pluto: A kind of water.

Ray guns: Small things that go zap.

Sphere: A primitive weapon.

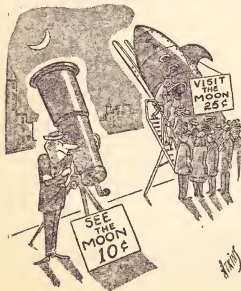
Speed of light: In today's science fiction, a pace slightly faster than the horse and buggy. (See "hyperdrive", "hyperspace".)

Time machine: An alarm clock.

Time warp: A hole in nothing.

Vampire: A species of bloodhound.

A **ND THAT'LL** be enough of that! —HB



BACTERIA WITH BRAINS!

By

JUNE LURIE

AMONG MODERN industrial establishments, few factories or plants can compare in impressiveness with one of the many large chemical structures which refine our oil, produce our sulfuric acid or provide us with steel or aluminum. The proud chemical industry, operating at peak efficiency, regards itself as sort of a minor god capable of doing anything. And in a way it is, for without certain fundamental chemicals, industry simply wouldn't exist. And at the bottom of all chemical production is sulfur. Grainy, yellow sulfur, from which sulfuric acid is made, is the most important single chemical produced.

As most people know, sulfur in the United States is "mined" with hot water! It exists underground in huge deposits in Texas and Louisiana. A well is sunk, steam and hot water pumped into the well, and melted sulfur flows out—just like that—in gigantic quantities. Nothing could be simpler. But as with many things, scientists suspect that in the not too distant future we're going to run out of this supposedly inexhaustible resource. Where to get more?

Apparently an answer has been found. A couple of British scientists wandering

around the Libyan desert area stumbled upon a fertile spot which uses bacteria to produce sulfur from natural chemicals! Actually there is an enormous amount of sulfur available everywhere—the trouble is that it is in the form of compounds, sulfates of one form or another. But at this lake, the scientists discovered a peculiar chain of events. The lake water reaches out and dissolves the sulfates from the surrounding earth. Then certain bacteria, acting much the way enzymes do in digestion, convert the sulfates into pure sulfur which sinks and settles to the bottom of the lake, one hundred per cent pure, just like that found in ordinary natural deposits of the mineral.

A quantitative investigation has shown that the bacteria operate at too slow a rate to be of very much practical value—as of now—but already attempts are being made to breed new strains which will have the speed faculty. If they can be produced, the sulfur supply of the world will definitely be assured. And this discovery has set into action a new chain of thought which suggests the application of bacterial processes to working with other minerals. Maybe we'll be growing iron ore some day!

TURBINE TRIUMPH

By OMAR BOOTH

THE GAS turbine is slowly but surely moving from the experimental stage into a promise of the future prime mover of the world. As electricity displaced steam, so surely will the gas turbine replace our conventional reciprocating engines. It's in the cards! And within the next ten years, nine out of ten aircraft will be driven by it. Then a little more gradually, the automobile will take it over.

The gas turbine which is nothing but a spinning wheel driven by the expansion of burning gases is, next to the electric motor, the last word in simplicity. With no reciprocating parts, wear is negligible, vibration is non-existent and no warm-up time is required at all. Get in and go! Fuel may be anything from high-test gasoline to practically unrefined asphalt—shove 'em in and blast off. Obviously maintenance is ridiculously easy, and replacement, child's play.

The drawbacks of the gas turbine are being overcome, one by one. First, alloys to resist high temperatures without stretch or creep or fusion are now available, thanks to the development of jet and rocket engines. Fuel consumption is still rather high, but is being pushed down in small decrements. With the conquering of these faults the turbine is ready to ride. In England, gas turbines in aircraft are commonplace, and here we are just find-

ing the major airlines ready to shove them in in place of the awkward reciprocators.

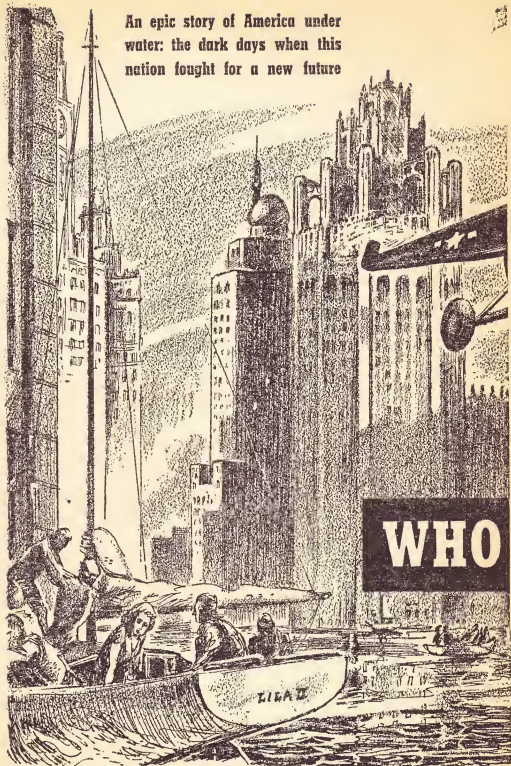
Another boost to the use of gas turbines comes from the electric companies which are providing small electric generating stations using gas turbines as prime movers. Mobile and simple, these outfits are coming into common use.

The trucking industry is breaking its back to devise a suitable turbine from the experimental models which have worked successfully. Once the trucks get it, it is only a small step to ordinary automobiles. Odorless, vibrationless, noiseless, efficient, acting as its own transmission and torque-converter, the gas turbine will eventually sweep the field.

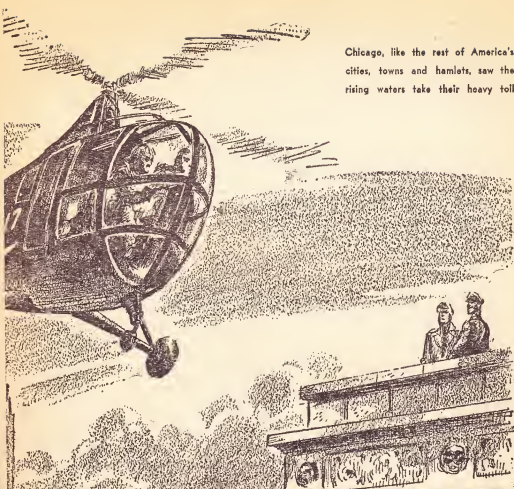
The gearing from turbine to shaft is made possible by a second stage of turbine which enables the proper speed reduction to take place without excessively complicated gearing arrangements. The exhaust of the turbine is no greater in temperature than that of a conventional engine. And the control is entirely by one simple throttle. With no ignition problems save the initial spark, the gas turbine is so much better than the reciprocating piston engine, that it seems almost a shame to compare the two.

You won't have to wait long—just remember that a gas turbine is not a jet or rocket engine, but it has the same simplicity. You'll be running one mighty soon!

An epic story of America under
water: the dark days when this
nation fought for a new future



WHO



Chicago, like the rest of America's cities, towns and hamlets, saw the rising waters take their heavy toll

SOWS THE WIND...

By Rog Phillips

NEAL LOOMIS had the uncanny feeling that he was a disembodied spirit hovering over the snakelike, slowly moving streams of humanity far below. The feeling didn't leave even when he manipulated

the controls that sent him plummeting straight down, to halt abruptly five hundred feet above the trouble spot he had discovered, looking down upon individual dots that were men, while those dots glanced upward at the

plastinosed jetcopter carrying him.

Automatically he flicked on the radio and called base. "Loomis," he identified himself. "Slide twenty miles south of point seventy-one point four. Route seven. Ambulances and excavating equipment needed. Terrain—mud."

He listened to the playback, grunted his "Okay," and flicked the mike over to the p. a. speakers.

"Help is on the way," he said into the mike; and outside the coptor his voice boomed thunderously. "Ambulances and excavating equipment will be here by freightcopter within an hour."

He grinned mirthlessly as he saw microscopic arms far below wave their gratitude for his prompt action. Touching the controls, he dropped still lower.

Most of the dots down there were men. Men walking from Duluth, too impatient to wait their turn on the busses, or anxious to get to the Arctic and find a place for their families before the women and children arrived by bus.

The slide, Neal saw, was a bad one. An entire embankment of the gorge which the ribbon of humanity had been flowing through had given way, washing down over the trail for a distance of two hundred yards and engulfing a hundred or more.

But now a new danger threatened. With those in back along the route still coming forward, in another hour there would be thousands at this spot. Such a weight would cause more cave-ins.

He whirled his jetcopter about and sped down the line with his p. a. system on, ordering the column to stop its march because of trouble ahead. He followed the line back this way for five miles until he reached a broad flat where there would be no possibility of cave-in. On his way back he saw

with satisfaction that most had complied with his order. The few who pushed on out of curiosity to see what had happened, dropped back into line as he explained briefly there had been a cave-in.

The first of the freightcoptors was settling gently. There was a bold white cross on it. It would have doctors, nurses and a complete emergency setup on board.

"Calling three seven seven," the radio said. Neal flicked the radio over.

"Three seven seven," he said. "Go ahead."

"Go to aid of two four three on route six at point seventy-one point two. Fighting going on."

Neal climbed to five thousand, shut off and retracted the lift blades, and, taking a deep breath, turned on the jets. The air speed indicator rose rapidly to five fifty and held there. The barren landscape below slid underneath unrealistically. Abruptly there was another column of human ants ahead, then underneath as he banked northward. Ahead he saw the island of milling men. He shot upward in a steep climb and shut off the jets. When air speed dropped to a hundred, he extended the lift blades and pressed the button that activated the coptor motor.

Then he was dropping almost in free fall to where he could see another jetcopter hovering.

"Two four three," an excited voice erupted from the radio. "Carl Adams. What shall I do?"

"I'll do it," Neal said. "Stay where you are and report my arrival." While he said this he dropped below the other coptor and brought up fifty feet above the melee of struggling men. He flicked on his p. a. and said, "I'll give you all five seconds to stop your fighting and get moving. Then I'll gas you." His voice boomed out under-

neath the coptor. "One! Two! Three! Four! Five!"

While he spoke, he broke out his binoculars and studied the men below. One man, standing apart from the others and surrounded by a compact group of half a dozen men, had been evidently shouting at the fighting mob. He now was looking upward, shaking his fist and shouting something. Abruptly he whipped out something dark. A flash of flame erupted. A second later there was a plunk from somewhere behind Neal, followed by the sharp report from below

Neal opened the tear gas cocks and gyrated over the mob, the lift blades sending the stuff downward. He did this with one hand while he broke out his gas mask with the other, constantly keeping his eyes on the man who had fired at him.

The gas was taking effect quickly. The fighting mob was now milling about in confusion as men became blinded and struck out wildly at friend and foe alike.

Neal used both hands to bring the jetcoptor over the leader. In a maneuver that had been drilled into him he opened the bottom hatch and dropped a rope about the man, jerking it taut. Seeing that it had landed just right, he started a gentle climb while pulling the man upward through the trap.

"Stop moving so much and let me handcuff you," Neal said calmly, "or I'll use a sap on you."

The man's reply was unprintable invective.

"Sorry," Neal murmured. He brought the leather-cased blackjack sharply against the man's scalp, and saw the flailing arms go limp.

THE NAME tatooed on the unconscious man's chest was Einar Tharnsen. Neal handcuffed him to the frame of the plastidome, then slid a second pair of handcuffs around the

pipe support of the seat and locked Einar's ankles.

With that done, he steadied the coptor and radioed his report. He was being told to bring the prisoner to base when Einar opened his eyes and shook his head groggily.

He tried to lift a hand to his eyes. Suddenly he became wide awake. He took in the handcuffs—the bleak landscape far below.

"You're in for it now," Neal growled. "Why'd you do such a fool thing as to incite trouble? You should have known—"

"Sure," Einar said bitterly. "I should have known. *You* try walking for two weeks in stinking mud instead of sitting upstairs in your chrome-ornamented observation jetcoptor with its airconditioning and thermos of hot coffee—"

"Where'd you get the gun?" Neal said. "You were searched before—"

"Wouldn't you like to know!" Einar taunted.

"Just curious," Neal murmured. "I don't know what they're going to do with you at base when I turn you over, but they can shoot you if they wish."

"And probably will," Einar said. "They're just that stupid. They've been nothing but stupid all along. I have a wife and four kids. What happens? They give my wife and kids passes on the bus and expect them to go up without me!"

"Why not?" Neal said. "The seat you wanted probably has some woman or child in it. You're lucky they let you start the trail. Maybe they'll send you back down to the States and let you die with the ones there won't be room for up north."

"Yes," Einar said. "While you ride around in your nice plane and have your bed at base made up by an orderly."

"According to you," Neal said, "we

should all be riding around in jetcoptors or all be walking the trail together. If you were in my shoes I doubt if you'd land your coptor and join those going northward on foot."

"The whole thing's stupid," Einar said. "You soldiers don't deserve to be in the driver's seat while we citizens are herded like sheep. I know a lot more about it than a lot of people. I know, for instance, that the big brass knew they were wrecking the world when they dropped those bombs all over Europe. Plenty of people knew that DeVree tried to tell the Government what would happen, and was told that they knew what would happen, but had to make a choice between wrecking the world or submitting to world conquest."

"What choice would you have made?" Neal asked idly.

"Surrender," Einar said. "Slavery for a generation or two, then revolt. It would have worked. And Europe and the Mississippi Valley would still be liveable."

"Me," Neal said, "I was drafted. I do what I'm told." He gave Einar a sidelong smile. "Maybe you'll learn to do the same."

Far below, the trail of human ants formed a narrow ribbon stretching from the southern horizon over the desolate lifeless terrain to the northern horizon. Neal retracted the suddenly stilled coptor blades. In the unnatural silence the wind could be heard whistling past the falling ship. Then, with a coughing snarl, the jets came to life, pressing both men firmly against the backs of their seats.

Neither spoke as the air speed indicator crept up to five fifty and held there, and the plastic-and-metal ship hurtled northward across landscape that—until two short years before—had not seen the light of day since before the dawn of known history, buried eternally, it was thought, un-

der the ice and snow that was the arctic wasteland of the world before World War III.

EINAR THARNSEN paced the small cell impatiently. In spite of his frustration and anger he found himself curious about his surroundings. The walls and floor seemed made of mud blocks, yet when he rapped on them with his knuckles they gave off a solid sound like the best of concrete. And when he scraped against them with his fingernails surprisingly little scraped away. The only thing wrong with them from the structural standpoint was their exceeding ugliness of color.

There was no window, barred or otherwise. The door was of solid metal with a small square up at eye level with heavy wire mesh apparently welded in. Light in the cell came from a single neon tube, unprotected. Einar's heart had leaped when he first noticed this, then dropped as he realized that the reason it was unprotected was that if the prisoner in the cell wanted to monkey with it he would be left in darkness.

Footsteps had been going up and down outside the door all the time, so that Einar paid no attention to them. Now, suddenly, there was a scraping sound against his door. He whirled toward it, a mixture of emotions on his face.

A man fully as big as he was outside as the door swung open. Behind him were others, all in army uniform.

"All right, you," the big one said. "It's your turn in court. Get moving. The lieutenant will be mad if you keep him waiting."

"No breakfast before court?" Einar asked.

"Breakfast?" the sergeant said. He shook his head. "The only prisoners that eat around here are those that are sentenced to be shot. Come on!

Get moving."

The corridors and courtroom were of mud block construction—the same as the cell had been. As Einar entered and glanced quickly around he saw there were only three people in the room: Neal Loomis, a WAAC who was obviously a secretary, and a lieutenant, short and slight of frame but with an unusually high forehead and calm expressionless features.

As Einar paused, the sergeant wrapped a beefy hand around his arm and guided him forward, to come to a stop directly in front of the lieutenant's desk.

"Your name?" the lieutenant asked.

"Einar Tharnsen."

"The charges against you have already been presented. Have you anything to say about them?"

"How do I know what they are?" Einar said defiantly. "I haven't heard them."

"They were factual," the lieutenant said coldly. "Where did you get the automatic you used to fire on an army plane?"

Einar gulped, suddenly nervous. The way that had been stated made it sound bad. "Firing on an army plane!"

"I owned it," he said. "I brought it along with me because I didn't know what I would be running into on the long trip up here."

The WAAC was writing rapidly in shorthand.

"Lieutenant Loomis reports that you seemed from the air to be inciting a riot. You were surrounded by what seemed to be bodyguards. You were shouting what may have been instructions to one faction of the rioters. Those are the appearances. Have you anything to add in the way of explanation?"

"I most certainly have," Einar said. "I am not going to name any names, but there was a tough punk

with a half a dozen lizards in the group. The first week they won all our money—from all the rest of us. After that they made us take second place in everything. At night they took the pick of bunks in the rest camps. If they didn't have as much as they wanted to eat out of the rations doled out, they went around and made the rest of us fork over part of ours. We had to organize. I did the organizing. That riot was the show-down."

"That doesn't check with your actions. If that were true, why didn't you welcome the intervention of Lieutenant Loomis rather than try to shoot him down?"

"I didn't try to shoot him down," Einar said uncomfortably. "I thought he would shoot back up again and give us time to really clean up on those hoods before it was stopped. Instead—" he turned accusing eyes on Neal, "—he used tear gas."

The lieutenant turned to the WAAC secretary. "He is to be transferred to labor camp twenty-three for a minimum of six months," he dictated. "A report on his conduct must be filed with this court every Monday."

"But my wife and kids—" Einar said, dismayed.

"Will be taken care of by the machinery set up," the lieutenant snapped, suddenly showing irritation. "Lieutenant Loomis was of the opinion that you think we should run things for your special benefit. I can see why he was of that opinion." He leaned forward, placing his elbows on his desk. "I want to warn you, Mr. Tharnsen, that your sentence has a minimum, but no maximum. If you are mildly intractable you will never be free. If you are more than mildly intractable you will wind up before the firing squad. You should be grateful that you are being given a chance to survive, and your children and

their children. Only a very small percentage of mankind gets this chance. But you—you criticize the conduct of the war, show continued defiance of authority, and seem unable to appreciate your privileged position and treatment. It is only the mercy of this court that prevents you from being sentenced to be shot—and the fact that we have a serious labor shortage in the mud block manufacturing industry."

His look at the beefy sergeant was an order to take the prisoner away.

"GOOD MORNING, Lieutenant."

Neal snapped out of his reverie and glanced at the speaker. "Oh, hello, Marv," he said.

"Thinking about home?" Marvin Swank asked, grinning good-naturedly down from his height of well over six feet.

"As a matter of fact, no," Neal said. "I was thinking of a poor devil that just got sentenced to the labor camps."

"He's lucky," Marv said. "How about dropping into the canteen for a cupscawfee with me—or are you in a hurry?"

Neal glanced at his watch. "I guess I can take half an hour without getting court-martialed. How've you been, Marv?"

They fell into step and started down the street together.

"I'm in mourning," Marv said. "The last of the Texas Panhandle is under water since about twelve hours ago. In a way though I guess it's poetic justice."

"What do you mean?" Neal asked.

"I owned a thousand acres of Panhandle," Marv said. "I made the money I bought it with by selling under-water Florida real estate. Now my thousand acres are under water."

"Oh," Neal said, his mouth quirk- ing into a half smile.

"The most interesting development though," Marv said, "is that the Atlantic and Pacific have gouged a channel through Honduras and Guatemala. They tried to delay it by blowing up a couple of mountains, but no soap."

"Well, that was inevitable," Neal said. "The mean level of the oceans in the tropics was eight feet above prewar normal six months ago and still rising."

"It'll be bad if the peninsula break-through washes a wide channel in a hurry," Marv said, pushing open the canteen door for Neal. "The Atlantic wash up the Mississippi Valley will become a tidal wave then, and probably extend the rest of the way up to the Canadian border. Funny about that, too. Maps of the United States are beginning to look quite a bit like prehistoric America."

The two men got in line with trays. Ten minutes later they were settled beside a window that looked out on the drab blocks of buildings and the equally drab street, all the color of mud.

"Things compensate though," Marvin Swank said, stirring his coffee. "The last of Texas goes under—and another thousand square miles of northern Greenland is dried out enough now for habitation. They're sowing it with wheat right now, in the hopes that enough of it will grow to hold the land in place. All this soil has been under ice so long there isn't any body to it to keep it from being washed away."

"Heard from your family?" Neal asked.

An expression of pain crossed Marvin Swank's lean features and was gone. He shrugged. "No news," he said. "But then, no news is good news. They're probably quite happy without me. How about your family?"

"No news yet," Neal said.

"Your wife, Annette, was in St. Louis wasn't she?" Marvin asked.

"Up until a week before the first tidal wave rolled over it," Neal said tonelessly. "That's the last letter I got from her. She told me about the bombing. It got our house. She was living with some friends just off Lindell Boulevard near Forest Park. Poor kid...she was trying to cheer me up by telling me all about how Joan and Frank ran wild over the zoo."

"She had the car, didn't she?" Marv said. "In all probability she got away safely to the high ground of the Ozarks."

"But—damn it—that was six months ago!" Neal said. He took a deep breath and got hold of himself. "Let's change the subject," he growled. "Sometimes I can almost feel the way Einar Tharnsen feels."

"Who's he?" Marv asked.

"The prisoner in court this morning," Neal said. "He sort of felt the army should move heaven and earth for him so he could be with his family. Maybe I should have told him the reason my own wife isn't safely up here is because the army feels it must lean over backward not to show discrimination toward families of its personnel." He looked at his watch. "Got to get going," he said, shoving his chair back and rising.

"Me, too," Marvin said. "We'll check in about ten thousand new arrivals today, according to estimates."

NEAL SENT his jetcopter straight up to five thousand feet. Below, the growing mass of base sprawled out over several square miles, a geometric pattern in the dark mud. To the north was a different kind of pattern where tiers of cement-impregnated mud blocks were stacked up to dry, with portable wind generators lined up beside them. It was labor camp twenty-three—the one where

Einar Tharnsen had been sent.

The feeling of being disembodied and suspended in thin air began to be felt. With a feather touch on the controls Neal swung the jetcopter slowly around, surveying the landscape below and the far flung horizon.

Several miles to the south the head of the main ribbon of migrants on foot was slowly approaching, giving the impression of being the forward end of some gigantic worm slowly slithering along.

To the west there was the occasional glint of sunlight reflecting from patrol craft. Idly Neal wondered if the Russians from their bases in Alaska were planning an attack. Probably not. Reports were that they were too preoccupied with survival there as the last of the ancient ice floes sent vicious torrents down through the newly naked valleys. And two thousand miles was too great a distance for heckling operations. That was one of the reasons why base had been established three hundred miles north of Chesterfield in a large plane of what had once been Hudson Bay. That, and the fact that the spot was the ideal radiating point for the vast lands opening up by the melting of the arctic snow and glaciers and the emptying of the thousands of square miles of inland seas.

Still, why were there so many fighter patrol craft out? Neal shrugged off the question uneasily as he stopped the motor and retracted the lift blades while the jetcopter plummeted in free fall. A moment later and the jets were blasting in full thrust, the air speed indicator reaching toward the five fifty point.

Below, the ribbon of human ants branched into three narrower ones. Five hundred miles to the southward they would further branch, until they were divided into perhaps fifty separate streams originating from as

many points of the Canadian-American border.

From ahead came the glint of another patrol jetcopter, and lower down, to the east, a huge freightcopter moved along like an overgrown bumble bee. "Maybe it's from that slide I reported yesterday," Neal thought.

"Calling three seven seven," the radio said suddenly.

Neal flicked the radio over. "Three seven seven," he said. "Come in."

"Base hospital reports your wife has a baby," the radio said. "I hope you thought to buy cigars for the event."

"A boy or girl?" Neal asked, suddenly tense.

"No definite report on that yet. Several of the babies are girls, but which is yours, I don't know. Anyway, congratulations. I'll be seeing you—I hope."

Neal looked anxiously to the west. There wasn't a sign of anything yet. Throwing in the autopilot, he got out of his seat and climbed out of the plastinose into the center-of-gravity section.

He had known his armament would be in order, but he wanted to make certain. The *cigars* glistened dully, target-seeking rocket missiles in racks where they would feed automatically into the firing tubes.

With a grunt of satisfaction Neal returned to his seat at the controls. A hasty glance to the westward reassured him. The sky was still empty. He fastened his seat harness. Now if his plane were hit he could press the seat ejecter stud and be free of the plane.

He glanced toward the west again, tensely. What would he get? A "girl"—relatively slow duster-type plane? Or a "boy"—one of the jet fighters? Neither, he hoped. But one might get through the fighter net and try to run

along several miles of the rivers of men, spreading radio-active dust or virus dust.

Or they might have an entirely new weapon to try out. That would be more likely. The radio-actives and virus dusts were pretty much a waste of time now with the G.I. germicide masks and the new plasma technique.

With startling abruptness Neal found himself staring at a plane with the same feeling he would have staring into the barrel of a gun. And it was remarkably similar in shape!

HE DID two things simultaneously. He pressed the firing stud on the control panel. He pressed the stud that would bring out the lift blades.

There was a still-photograph memory of his target-seeking rocket exploding near the enemy plane. It hung stationary in his vision as he felt himself thrown violently forward.

The violence of his forward motion jerked his hand from the stud. There was a long moment of utterly dizzy flight before the lift blades retracted from their partial extension and the autopilot sought and found a steady course.

There was another long second while he got used to the idea of still being alive. As he looked around outside for some sign of the enemy plane a strange calm took possession of him. He welcomed it. He had possessed it before in air combat. Sometimes he had wondered at it, wondered if it were something new or the same as the calm that may have possessed all men fighting for their lives under the constant presence of death, even in the days when such fighting took place on horseback or on foot.

There was no sign of a burning plane streaking toward the ground. That meant the attacking plane hadn't been hit mortally.

Below, the ribbon of men was flowing out into a wide, indistinguishable blot as the migrants recognized their danger and spread out to minimize it.

From the north a plane appeared, following the line of the migrants' trail. Behind it a widening cloud of white streamed. In split seconds Neal turned his plane in its direction and fired. This time there could be no miss. The target-seeking rocket would have an appreciable fraction of a second to get its bearings and locate its target.

The "girl" saw its danger and pointed upward to escape at the last instant, then disrupted into flying bits of metal.

"God! It's quick!" Neal muttered. "I'll never get used to it. Never!"

Another plane appeared. His heart stopped. Then he recognized the familiar lines of an American fighter. There were others now. The sky was full of them.

Neal sent his plane into a steep climb and shut off the jets. The airspeed dropped. At a hundred he sent out the lift blades and started the motor. His role now would be that of decoy if any enemy pilot were inexperienced enough to want to make him a target.

The danger was far from over, but the fight was out of his hands now. He deliberately forced himself to ignore it and concentrate on what lay below.

The streamer of cloud the enemy plane had laid out was resolving itself into individual parts now. Parts that fluttered and fell slowly.

"Papers!" Neal grunted.

He dropped his jetcopter toward the mass of fluttering slips of paper. They shied away from him as he sank into them. He had to drop all the way down and get out of the plane to get one.

"Huh!" he grunted as he read it.

Comrades of America, it read. Revolt against your warlord slavemasters who have brought ruin to the world. Unite with us for peace and brotherhood. There is room for us all. Destroy this note and bide your time until we come to help you liberate yourselves.

It was signed, *The People's Army*. Neal contacted base and read it.

"Turn it in at the end of your day," came the instructions. "We can find out all sorts of things from it."

"Right," Neal said.

He folded it carefully and put it in his billfold, then lifted the jetcopter and began his patrol. Half an hour later he passed over the landslide of the day before. The ribbon of men had been routed around it. Huge machinery was clearing it away in a futile search for victims that might still, by some miracle, be alive.

It was nearly four hours before his hands began to itch a little and he looked down and saw the green blotches on them.

"SUCH AN old trick," Dr. Green said sadly. "But maybe that's why it succeeded. The first thing I would have thought of with those pamphlets was disease or chemicals."

Neal made no answer.

"And such an interesting new disease," Dr. Green went on. "Gangrene in healthy tissue!"

"Gangrene?" Neal said.

"Yes, that's right. Gangrene. And we're going to have to act fast. I think it works only by contact and by spreading from cell to cell. We'll save enough of the infected areas of your skin to study it. You will undress now. Be careful you touch no other parts of your skin with your fingers. Your face?" The doctor became suddenly concerned. "I hope you haven't touched your face!"

"I—I don't think so," Neal said.

"After I saw the blotches I didn't, naturally. Before that I'm not sure."

"There seems to be no infection on your face," Dr. Green said. "If you haven't touched it there won't be. Perhaps. Here, Dr. Ohrman," he said to the interne beside him. "Help him undress. Put some rubber gloves on so you won't catch it. Take him to the surgery and put him under anesthetic, then cauterize a narrow band around each infected area back far enough into the healthy flesh to make sure it's confined. I'll be up shortly after I've informed base and given them instructions for dealing with the migrants and destroying the pamphlets. This may be more serious than we think. We must act quickly."

He left the room, taking his calmness with him.

"Sit down and hold your hands out away from you," Dr. Ohrman said, going to a drawer and taking out a pair of red rubber gloves.

Neal took in the paleness of the interne's features and sensed the man's panic. A little of it spread to him.

"What's making you so frightened?" he asked, sitting down. "After all, gangrene is an old ailment. Surely you doctors can handle it?"

"Of course. Of course," Dr. Ohrman said, giving Neal a smile that was meant to be reassuring. "We'll find out all about it and learn to handle it effectively."

"It's just the same old disease stepped up in virulency, isn't it?" Neal persisted as the interne unlaced his shoes and pulled them off.

"Of course," Dr. Ohrman said, not looking up from his task. "Now we will slip off your trousers..."

"NOW WE will slip off your trousers!"

Neal came fully awake at the words. It took a moment to place

them, then memory flooded into his mind. He opened his eyes and looked up at the ceiling. It was white enamel. Some reason for that. Oh yes, he was in the hospital!

"My hands!" he thought. He lifted his head to look at them. They stretched beside his body, but on top of the sheets. He studied the bandages anxiously until he was sure they outlined unamputated hands and arms.

"I must have dreamed they chopped them off!" he thought, his head sinking back onto the pillow in the weakness of relief.

The door opened. A pretty brunette came in.

"He's awake now," a voice sounded to the right.

Neal looked from the nurse to the owner of the voice. For the first time he became aware that there were others around him. He was in a large ward.

He looked back toward the door but the nurse was gone.

"How do you feel?" the man in the next bed said cheerfully. "Brother, you've sure been through hell this past week. Kept me awake darn near every night."

Neal jerked back to look at the man, saw the unnatural flatness of the sheets below the man's hips.

"Yeah, lost my legs. Both of them," the man said. "A cave-in on route seven."

"I saw that," Neal said. "I was the patrol that reported it."

"Thanks!" the man said. "Guess I owe my life to you. The doc said if he'd gotten there fifteen minutes later I'd a been dead. By the way, my name's Adams. Charlie Adams. Yours?"

"Neal Loomis," Neal said.

"Glad to know you, Neal," Charlie Adams said gravely. "I'm sorry I said that about you keeping me awake nights. You sort of have a right to—

since I owe my life to you. Anyway, I guess maybe it was the itching on my stubs that kept me..." His voice trailed off as the door opened again and the doctor came in, followed by the nurse and the interne.

"SO YOU'RE awake?" Dr. Green said cheerfully. "That's fine. We've had a lot of trouble with you. Remember any of it?"

"A little," Neal said. "Not much. And most of what I seem to remember seems more like dreams."

"It'll straighten out," Dr. Green said. "You were luckier than most of the others that picked up those pamphlets. That was because we got you hours earlier."

"How long have I been here?" Neal asked. "It seems like only hours, but this man next to me—Charlie Adams—he—"

"Yes?" Dr. Green said.

"Well—he seems to have been here quite some time, and I know he must have been brought here less than twenty-four hours before I was."

"I've been here three weeks," Charlie Adams spoke up.

Dr. Green frowned at the man, then nodded. "Yes, you've been here three weeks, Loomis. It took time to find anything that would touch the disease. It was in your bloodstream, of course. We cut off all the infected skin but it didn't do any good. Still, with that skin we finally found the counteragent and saved you. Wish I could say the same for the other victims."

"H—how many were there?" Neal asked.

"More than there should have been," Dr. Green said. "But we're ready for any new attacks."

"How many?" Neal repeated. He had shouted it, and now was surprised and a little alarmed at himself because he had had no intention of

shouting. He wasn't even angry, but his voice had been hoarse with anger.

"Quick, Dr. Ohrman," Dr. Green said.

Neal saw the two doctors spring toward him, one on each side of the bed.

"Get the hypo, Miss Phelps!" Dr. Green said jerkily.

Neal's mind was numbed by the utterly fantastic contradictions it was observing. He was quite calm—but he could feel the muscles of his face contorting with rage. He was giving no orders to his muscles, but it took both doctors to hold his shoulders and arms pinned down.

Everything about him seemed to have developed a will and mind of its own.

A slow lassitude seeped into the flesh of his left shoulder. It spread rapidly. He felt the lingering withdrawal of the doctor's fingers from his shoulder.

"At least it's an improvement," he heard Dr. Green say. "I think that's the first time true consciousness has manifested itself. Dissociation showed in his expression. That's something..."

Neal waited a long time for Dr. Green to finish his thought before he realized he had been asleep.

"Are you awake?" a voice sounded. "They told me to watch your eyelids. When they show your eyes moving underneath you're awake."

It was Charlie Adams. "Yes, I'm awake," Neal said. He opened his eyes and smiled ashamedly at him. "I guess I made an ass of myself."

"You couldn't help it," Charlie said.

"I don't know what hit me," Neal said. "I wasn't mad—"

"The doctor said something about your subconscious going wild," Charlie explained helpfully. "He says it's a little loose or something. He sort of

forgot anyone was around to hear him, and was talking to Ohrman about some of the others that've got what you've got. Raging wild beasts while they cry for someone to stop them."

"That'll be enough, Charlie," a feminine voice said.

Neal turned his head. The brunette nurse had come in. She smiled at him and walked up to stand beside his bed. He smiled back, a part of him wondering why she hadn't called the doctor in case he had another attack.

"We have you nicely secured so your body can't act up," she said, reading his thoughts.

He glanced down and saw the straps around his chest and arms.

"Oh," he said. He glanced up at her. "What came over me? I can't understand it!"

"It's a nerve virus," she said. "Something quite new. *They* found it first. The gangrene was only a symptom caused by its giving the skin cells a bad case of the jitters. But don't worry. You're quite definitely going to be all right again."

"Her name's Francis," Charlie Adams said eagerly. "And if you ask me, she's fallen for you, Neal. You ought to see the way she stands and watches you."

A slow flush spread over the nurse's face. Her eyes withstood Neal's stare for a moment, then lowered.

"Shut up, Charlie," Neal said.

"**WHAT'S** your name, punk?"

Einar Tharnsen doubled his fists and glared. "It's on that card in your hand, squirt."

"Wise guy, huh?" the guard said, his lips pulling back in a mirthless smile. Without warning his hand shot out and slapped viciously against Einar's cheek. "What's your name?"

Einar blinked from the blow, then instinctively went into a fighting crouch. From somewhere in the

depths of his mind a voice spoke. It was that of the judge. "*If you are intractable you will never be free.*"

The mad glaze in his eyes slowly softened. He straightened and relaxed while the guard watched him, mocking contempt in his expression.

"Einar Tharnsen."

"That's better," the guard said. "Ever run a shovel?"

"No."

"You're going to run one. Follow me." He turned his back on Einar and started across the yard.

Einar hesitated, then followed him. They got into a jeep. The guard drove it at a mad pace across rough ground toward a point a quarter of a mile distant where men and giant machines were at work.

"You'll have someone with you the first couple of days," the guard said. "This is your only chance for a soft job. If you don't make good as a shovel man you'll be emptying cement sacks."

"You mean one of *those* big things?" Einar said in dismay, pointing at the giant shovel scooping up two yards of semi-solid mud at a time and dropping it expertly into a waiting truck.

"What did you think I meant?" the guard sneered. "One you spade a garden with?"

He brought the jeep to a skidding stop near the behemoth of intelligent steel, stood up, and waved for the operator to come over.

The man leaped lightly from the cab and came over, grinning at the guard and looking curiously at Einar.

"New prisoner," the guard explained. "Show him how to run the shovel."

"Sure thing," the man said. "Come on, fella. Can't hold up the trucks." He gave Einar a welcoming grin and started back to the shovel.

Einar glanced at the guard, then

leaped from the jeep and followed, catching up with him.

"Name's Jeff," the man said. "Yours?"

"Einar."

"Einar, huh..." Jeff said. "Used to know a guy by that name. What's your last name?"

"Tharnsen. I'm from Cincinnati."

"Nope," Jeff said, reaching for a handhold and pulling himself up to the first step to the cab of the shovel. "That guy's last name was Pederson. Mine's Smith. Portland Oregon." He pointed at a rivet-studded box. "Sit there and watch. No use telling you anything until you get used to the feel of a shovel."

During the next half hour Einar watched with absorbed interest as Jeff casually put the tons of co-ordinated machine through its paces.

"Uncovered something a week ago," Jeff shouted, glancing at him. "Some bones. Big ones. I sort of watch every shovel load. Never can tell. I heard a rumor that they uncovered some sort of ruins further up north not long ago. Supposed to be strictly hush-hush, but it leaked out before they clamped the lid."

"I wouldn't be surprised," Einar shouted above the noise. "The theory's been advanced several times that the Arctic was the cradle of mankind."

Jeff looked at Einar and lifted his eyebrows in surprise. Einar didn't notice this. His eyes were on the shovel, studying the black earth it was forcing its way into for another load.

"**H**I, GOLDBRICKER." Marvin Swank fidgeted with his cap and smiled down at Neal.

"Hello, Marv," Neal said. "Take a load off your feet and tell me what's going on. By the way, this eager eyed pup in the next bed is Charlie Adams. He was walking up, got tired of

walking, and stuck his legs under a landslide."

"Smart lad," Marvin said, nodding cheerfully at Charlie. "They'd have been worn down to the hips by the time you got here anyway. This way you got a ride. By the way, where are you from?"

"California. Bakersfield."

"Oh," Marvin said, disappointed. "Ever been to Amarillo?"

"Yeah," Charlie said. "I was working there for about six months before I started up here."

"Yeah?" Marv said, hope dawning in his eyes. "You didn't by any chance ever hear of Thelma Swank did you? She had a dress shop on Polk Street..."

"No," Charlie said. "A relative of yours?"

"My wife," Marvin said. "I haven't heard from her."

Charlie looked at Marvin thoughtfully. "I wouldn't worry about her," he said. "I was there when the water came in. There was plenty of warning, and nobody got hurt as far as I know."

"Thanks," Marvin said. He turned back to Neal. "They tell me you picked up one of those Russian pamphlets with the nerve virus on it."

"I did," Neal said. "Stupid, but I can't think of everything. They've been dropping pamphlets about every third time they've come over here, and none of them had anything like that before."

"It seems we'll never learn they always have a reason for everything they do," Marvin said sadly. "They do something stupid like dropping pamphlets saying, *Workers arise!*, and we laugh at how stupid they are. Then we wake up too late to the fact that they were leading up to something. They got almost fifteen thousand with that nerve virus before we found the cure."

"Fifteen thousand dead?" Neal asked, dismayed. When Marvin nodded, "Then why didn't I die? I was among the first to get it!"

"They kept you doped," Marvin said. "I've been calling almost every day. Dr. Green explained it to me. The nerve virus works by getting into nerve cells and triggering them. They had to keep you alive because you were their guinea pig. Pretty ticklish there for a while. Your heart started acting up. Jumping around. They finally had to by-pass it with a mechanical heart. Then they found the counteragent and tried it on you. It worked."

"So that's why I was unconscious so long!" Neal breathed.

"That's the way most of them died," Marvin went on. "The virus got to the heart nerves and started working them. The heart would pump about ten times as fast as it should and build up pressure that ruptured blood vessels right and left. There's no more danger from that though. Everybody's inoculated. Gad! I've had inoculations against so many things now my blood's nine-tenths vaccines!"

He sat down and slumped out so that his legs stretched out an unbelievable distance from the chair.

"You kept up on the war news?" he asked. When Neal shook his head, "The Ruskies laid a hundred mile deep belt of radio-active dust all along the fifty-fourth parallel so that anyone in the lower half of Europe and Asia who tried to get north to safety would die before they got across the belt. Not only that, they had over three million of their own troops below it. They're still there, raising hell. Think they're going to be pulled back across by troop transport when the war's over."

"Maybe they will be," Neal said. "Russia's going to need all her manpower to rebuild with the snow and ice gone."

"Nah," Marvin said. "She's got too many, same as us. By the way—another scientist came out with a theory about why the Earth speeded up seven minutes a day in its rotation after the Polar ice melted."

"Can you get a copy for me?" Neal asked. "I'd like to study it while I'm lying here. That problem intrigues me. Everything we know says that if anything, it should have slowed down a bit."

"I think I can," Marvin said.

A pleasant feminine voice sounded from the doorway. "You'll have to go now. Visiting hour's up."

Marvin glanced around quickly. "Okay," he said. He kept his eyes on her as she came into the room and passed the tips of her fingers against Neal's temple to count his pulse. He grinned at Neal. "I think I'll pick up that nerve virus myself," he said.

"You don't stand a chance," Charlie spoke up. "Frances is going to marry Neal when he gets out. I've already got it fixed."

"Yeah?" Marvin said. He opened his mouth to say something and saw the expression on Neal's face. His grin came back. "Well, far be it from me to take her away from him, better man though I undoubtedly am."

He went to the door. "So long," he said. "I'll see if I can find that paper, Neal. Don't go taking any long walks on short piers, Charlie."

A look passed between Frances and Neal. She followed Marvin out into the hall. He dallied, looking at her expectantly.

"I wanted to tell you," she said, "that I know Neal's married. It's just that—well, I don't know how to explain, but we feel that Charlie Adams shouldn't be told that. His interest in the supposed budding romance between me and Neal helps keep him cheered up."

"Yeah?" Marvin said. "Want to

know what I think? I think you should stop kidding yourself and admit you love—Charlie!”

He walked down the hall, conscious of her startled eyes on his back.

EINAR GRABBED the handhold and leaped lightly up into the cab of the shovel. “G’morning, Jeff,” he said cheerfully.

“Hi, Einar,” Jeff said. “Today’s the day you run the shovel and I watch.”

“Good,” Einar said. “You know I have to laugh. I’m supposed to be being punished or something, and instead I’m learning a job I really like. The worst punishment they could dish out to me right now would be to take me off this job.”

“Don’t get too cheerful,” Jeff warned. “They can’t use any more shovels on this project. I think as soon as you can handle her they’re going to send you up north farther.”

“That doesn’t make any difference,” Einar said. “It’s the job. I never knew before the thrill of handling a few tons of metal with a personality.”

“Wake her up,” Jeff said, smiling.

Einar got into the operator’s seat and stepped on the starter. The motor came to life at once with a throaty roar that settled into a contented rumbling purr.

“Just take everything calm,” Jeff warned. “Don’t go getting excited about anything. If you do you’ll pull on the wrong levers and maybe bash in the cab of one of the trucks.”

“Did you hear about that nerve virus the Russians used?” Einar said conversationally.

“Yes,” Jeff said. “I heard. Only—was it the Russians?”

“Of course it was the Russians!” Einar said, looking at Jeff in surprise. Jeff stared back at him. Einar frowned. “What do you mean, was it the Russians? That flying saucer stuff has been pretty well exploded. Don’t

tell me you think it was men from Mars!”

“No,” Jeff said. “Did you ever stop to think how silly it would be, the Ruskies going to all that trouble to give away the secret of a weapon like the nerve virus? Why didn’t they make an all-out attack and give the germ to the whole lot of us. We’d all have died, doctors and all, before a cure was found. The war’d be over!” He shook his head thoughtfully. “No, I don’t think it was the Russians.”

“Who, then?” Einar demanded.

“Us,” Jeff said. “That’s the only thing that makes sense. It wouldn’t matter if a few thousands of those coming up died. There won’t be room for all of them anyway.” He spread his arms in a gesture. It’s killing two birds with one stone. Getting rid of a few thousand undesirables and testing a new bacteriological weapon at the same time. Only they’d never dare make *that* public.”

“But those planes!” Einar said. “This guy that came into our block last night said he saw the Russian planes overhead. They didn’t drop any of the pamphlets along his route, but he saw them fly over.”

“We’re capturing Russian planes all the time,” Jeff said. “What’s to prevent us using them for a thing like that?”

“I don’t believe it,” Einar said, shocked.

“According to what they tell us,” Jeff said, “the Russians are all bad and we’re the fair haired boys. I’m of the opinion we don’t know the half of it.”

Einar frowned uncomfortably. “I’ve never thought much about it,” he said. “What *are* we fighting about?”

“You tell me,” Jeff said, grinning. “What are you driving at?” Einar asked.

Jeff puffed studiously on his brown paper cigaret. “Just this,” he said.

"There's a lot of us in these concentration camps up here. When the time is right we could take over, join with the Russians, and the war would be ended."

"Hey there!" a voice shouted. "Get that shovel goin'!"

"**N**O, I DIDN'T forget it," Marvin Swank said. He reached into a pocket and brought out a folded sheet of newspaper. "This fellow—a Ph.D. by the name of Mason—has his theory pretty well worked out. He's got the math there, too. All it needs is some new surveys to check his results."

"Thanks, Marv," Neal said, laying it on the stand beside his bed. "I'll read it later."

"What's it say?" Charlie asked.

"This fellow, Mason," Marvin said, "claims that starting about five miles down, the Earth is semi-molten in state, due to the tremendous pressure. That even iron and granite that far down begin to act like syrup in some ways. When the billions of tons of ice and snow at both poles started to melt and flow toward the equator it took some of the weight off the poles. As a result, the balance on the fluid center shifted, and that center shifted its shape to compensate for it, causing the diameter at the equator to become a little less, and the diameter at the poles to become a little greater. That made the ocean level at the equator go up and raised a lot of land up here and in the Antarctic. But the angular momentum of the entire mass had to remain the same, and the only way it could was for the Earth to speed up its rotation. He's got the figures predicting just what they'll find the measurements to be now."

"But why weren't there earthquakes and things like that?" Charlie asked.

"Mason says the reason there

weren't was that the solid crust could stand the little stretching and compressing that took place without shifting appreciably. One thing that checks already is the amount the oceans have risen in the tropics. Even the most fantastic estimates of the amount of water contained in the snow and ice at the poles couldn't account for all of it."

"I still can't see how all that would speed up the Earth though," Charlie said.

"Look at it this way," Marvin said. "At the equator it was travelling a thousand miles an hour, roughly. Let's say a thousand to keep it simple. Twenty-four thousand miles around the world, and any spot goes all the way around in twenty-four hours."

"Okay," Charlie agreed.

"So then it shrinks down to twenty-three thousand miles around," Marvin said, "but it still goes a thousand miles an hour because there's nothing to slow it down. So the spot gets all the way around in less than twenty-four hours."

"Yes," Charlie said. "I see it now. I think he's right."

Neal and Marvin looked at each other and smiled imperceptibly.

"Were you awake during the earthquake last night, Neal?" Marvin asked.

"No," Neal said. "Charlie was, though."

"The radio says it was pretty bad in the United States," Marvin went on. "The breakthrough at the Isthmus expanded too fast. The few feet of difference in the level of the Atlantic and Pacific down there built up a momentum of several billion tons once it got started. Blowing up a couple of mountains with buried hydrogen bombs did more harm than good by weakening the bedrock barrier, too."

"God!" Neal muttered, his eyes

wide. "It seems that anything we do lately takes on world proportions. Those atom bombs in Europe—how could we have known?"

"What about that scientist that tried to tell them at the Pentagon?" Charlie asked.

"I don't believe that," Neal said quickly. "They have stories like that about every war. They had one about the British sinking the ocean liner with their own submarines, bringing us into World War I, instead of the Kaiser's U boats. They had the one about Roosevelt knowing Pearl Harbor was going to happen, but let it, to incite the American public to enter World War II. You'll always find stories like that."

"But *somebody* must have known!" Charlie said gravely. "Why even I heard stories about atom bomb weather."

"The point is," Neal said, "nobody did know. At least *I* don't think they did."

"I guess I don't either—now," Charlie said.

"How're your legs coming, Charlie?" Marvin asked quickly to get the subject changed.

"Pretty bad sometimes," Charlie said. "I get the feeling that they're itching, or cold, or wet, or moving around by themselves." He shook his head. "But of course they aren't. And Dr. Ohrman gives me a shot when it gets too bad."

Marvin looked at his watch. "Got to run," he said. "I'm late now. I just ran in during my lunch hour instead of waiting until Saturday to bring you that article, Neal. Take care of yourself. You too, Charlie."

HE LOOKED speculatively at the mud splattered bus with its pile of worn-out tires and new tires still in their wrappings on the top, and the weary faced women and children

still disembarking and huddling in a compact group, waiting to be told where to go.

Skirting the tired group, he entered the station, nodding to the driver, though he had never seen him before. Driver and bus had made a one-way trip. From now on they would remain in the northland, transporting people to the various new centers as they opened up. Ten thousand of them in a year and a half, and each loaded with people...

"You're in charge?" the driver asked. "Here's the passenger list."

"Thanks," Marvin said. "That girl over there behind the desk will tell you where you're to go. A mechanic will take your bus to the garage. Have a nice trip?"

"Nice?" the driver echoed. "Ha! But we didn't have much trouble. They could get something better for a road though. That metal grill stuff tears the tires, and once they start to go..."

"I know," Marvin said. "I've made the recommendation. Every driver says the same thing. The big trouble, they inform me, is that they have to shift the road so much due to slides. Can't pave it with anything permanent."

"Well, it ain't my headache any more," the driver dismissed the subject. "One of the women died on the way up. She's in the back seat wrapped in a blanket."

"Her name?" Marvin asked quickly.

"It was just last night," the driver said. "You can find out when you check them off." He started toward the desk Marvin had pointed to, then turned back. "She was—kinda nice. Somebody's grandmother, I guess." He turned again, quickly as though ashamed of this display of sentiment.

Marvin went slowly over to his own desk, his eyes skimming the passen-

ger list. They stopped at a name, frowning.

"Damn," he muttered. "That name's familiar. Mrs. Einar Tharnsen. Where have I heard it?" He picked up the hand mike lying on his desk and pressed the button at its base. "Will Mrs. Einar Tharnsen please step inside?"

He laid the mike down and watched the street door expectantly. The woman who came in was rather pleasant looking, with straw colored hair done up in a thick braid nesting on top of her head. Two boys and a girl came with her—the boys, quiet and brave; the girl, about six, holding her mother's hand, eyes wide with fear.

Marvin watched them approach his desk. He knew at once he had never seen them before. Suddenly memory struck him. He sucked in his breath.

Mrs. Tharnsen stopped, her eyes mildly curious. "I'm Mrs. Tharnsen," she said quietly.

"Would you have your children wait outside please?" Marvin said politely.

"Is it something about Einar?" she asked numbly. "You can tell me in front of them, please."

Marvin hesitated, looking searchingly at the three child faces waiting stoically for him to speak. He realized suddenly that they were waiting for him to tell them Einar was dead.

"Oh! It isn't that bad!" he said, chuckling. "Mr. Tharnsen got into a little trouble on the way up and was arrested. He's safe enough—in one of the labor camps. And maybe now that you're here you'll get to see him. Go over and sit on that bench and I'll have one of the girls make a few calls to see if we can fix it."

"H-he wasn't killed by the nerve virus?" Mrs. Tharnsen asked. She stood there for a moment looking at Marvin.

"Pop's alive!" the older boy shout-

ed. "See, mom? I told you they couldn't kill him!"

Mrs. Tharnsen was weeping quietly. "Come, children," she said. "The man told us to go over and sit on the bench. Waiting won't be hard now. Come on, and stop jumping, Hannes—or you'll be in jail too!" She flashed Marvin a tear-brightened smile; then, alternately weeping and chuckling, she led her brood over to the bench against the drab mud block wall.

"See if you can get the court's okay for—" Marvin said to the girl at the desk nearest his.

"I know what to do, Marv," she said.

"And get them over to take care of the dead woman, too," Marvin added. He picked up the mike. "All of you form a line beginning at the door and as close to the building as you can..." And through the window he saw the tired bus passengers move to comply.

HOW YOU feeling this morning, Neal?" Dr. Ohrman asked, placing his fingertips against Neal's temple and frowning at his wristwatch. "Never better, Fred," Neal said. "When are they going to let me out of here?"

Dr. Ohrman didn't answer. After a moment he took his fingers away from Neal's temple and went around to the foot of the bed and took the chart off its hooks.

"Hmm," he said. "No attacks for seven days now! How about relapses of consciousness, Neal? Any more of those mysterious jumps of fifteen minutes to a couple of hours?"

"Nope," Neal said. "I doze off several times a day, but it's just sleep. No blinking my eyes at four o'clock and finding it suddenly eight-thirty."

Dr. Ohrman went around to the side of the bed again and touched the back of Neal's right hand gently, bending over to look closely at the

spiral pattern of white and pink skin.

"Skin graft is doing OK," he said to himself.

"A little numb," Neal said, "and here—" He touched a spot on his wrist. "When I touch here I'd swear I'm touching my arm up above the elbow."

Dr. Ohrman smiled. "That's probably where that section of skin came from." He traced with one finger. "We sliced thin strips of skin along the arm and spiraled them over the areas we took the infected skin from, leaving them attached at one end. That way there was just a narrow gap between each strip for scar tissue to fill in. Eventually your mind will relocate the sources so that you'll lose the sensation of being touched where the skin came from."

He turned Neal's hand over and looked at the fingertips.

"We'll have to take your fingerprints before you leave, so that you can be identified from the new ones. Are you able to feel anything with your fingers?"

"Just pressures," Neal said. "I do all right when I'm watching what I touch, but when I close my eyes..."

"That may be permanent," Dr. Ohrman said. "It won't bother you to speak of, and your new—" He stopped abruptly, biting his lip.

"New what?" Neal asked.

"I suppose I may as well tell you," the doctor said. "Those tests we've been running you through—fatigue and reflex tests—show that for some unaccountable reason your reaction time has speeded up about fifty percent and your fatigue time has lengthened to something fantastic. We don't know if it will be permanent, of course."

"You mean those tests where I wiggled a finger until it was too tired to move any more, and pressed a button when a light flashed on?"

"Yes," Dr. Ohrman said. "There's some slight physiological change in your nerve fluid brought about by the virus or the antitoxin, we don't know which. It's made you just about the fastest thing alive."

"I've noticed it a little," Neal said. "I just thought I was still nervous. Jerky."

"I might as well tell you the rest of it while I'm at it," the doctor said. "The Government wants to use this new faculty of yours as soon as we release you."

"How?"

"I don't know that," the doctor said. "They didn't tell us. All I know is that they're very interested in you all of a sudden and want us to release you for active duty as soon as possible." He straightened up and stood looking down at Neal. "So I guess we'll have to let you go—tomorrow. I hate to. I'd like to keep you here and study you another month." He turned abruptly and left the room.

"Golly!" Charlie said, wide eyed. "Maybe they want to transfer you to U.S.O. and make you into a boxer!" A concerned look appeared. "And what about Frances?"

"Why don't you get wise to yourself, Charlie?" Neal snapped, suddenly irritated. "Everybody but you knows she's in love with you."

"You're wrong!" Charlie said quickly. "I haven't got any legs! Why—"

"Yeah, you haven't got any legs," Neal snapped. "You're a coward. You want to give up and be a cripple. You don't want to get a couple of mechanical ones and spend hours learning to walk, and then dance, and work. You feel sorry for yourself or you wouldn't try to marry off the girl you love. You'd fight for her if you weren't yellow. You'd—" He stopped, brought up short by the expression on Charlie's face.

"You shouldn't have said that, Neal," Charlie said.

"This is a man's world—what there is left of it," Neal said. His lips worked soundlessly. Suddenly he plopped over with his back turned to Charlie.

It was a long time later that Charlie's voice came, quiet and sort of wondering. "You know, Neal, the world now is something like that. A man who's lost his legs. And—and—"

"Sure, Charlie," Neal said, his voice muffled.

"**THEY'RE** transferring you to camp fifty," Jeff said as he entered the cab of the shovel and dropped down onto the rivet-studded tool box. "So—tonight you meet the big boy and you get your instructions."

"Good!" Einar said without turning as he brought the loaded shovel over a waiting truck and dropped two yards of black wet dirt into it, then swung the shovel back for another bite at the embankment.

"How'd your wife make out?" Jeff asked. "I heard she came to see you again today."

"They're sending her to the Repulse Bay settlement," Einar said.

"She'll be okay there," Jeff said. "Nice place. You won't have to worry about your family."

"Well, I can be with them in four months," Einar said.

"Four months?" Jeff said. "Look, Einar, I thought you were taking this seriously!"

"I am," Einar said.

"Well, you don't think this's coming off in four months, do you?" Jeff said. "It'll take maybe six months more. Maybe not, but we can't be sure. You're going to have to pop a guard when you get to camp fifty. Not anything to get you a punishment job, but enough to keep from

getting out on the minimum."

"Why?" Einar asked. "Can't I be just as good—even better—if I'm outside where I can get hold of things?" He glanced at Jeff questioningly.

Jeff shook his head. "The whole thing's being kept in the labor camps," he said. "When the time comes we've got to know where each man is, so he can get his orders and act. We can't risk setting up communications and organizations where there's a lot of smart intelligence officers with big eyes and ears. They're not looking inside the labor camps. Not for revolution."

"How many men have we got now?" Einar asked, bringing a full shovel over the roadway and holding it stationary while an empty truck drove up.

"Maybe only you and me," Jeff said. "None of us had better learn too much. If they got wind of this thing they'd torture everything out of you. There's a war on, you know." He stood up and hung on as the cab swung ponderously around, carrying the shovel to the embankment again. "I'll hop off now," he said. "I'll see you after chow tonight in the recreation yard."

JEFF WAS leaning against the mud block wall beside the entrance to the yard as Einar came out. He looked at Einar meaningfully, then started to stroll leisurely through the scattered crowd of two hundred prisoners, hands in pockets, nodding to this and that man as he passed them.

Einar stood watching until Jeff had gone about fifteen feet, then slowly followed. The guards on the wall would notice nothing. They watched for only two things: Rapid movement such as running or fighting, and the collecting of small groups.

Never directing his face toward Jeff, Einar kept his eyes on him.

After a while he saw Jeff pause beside a heavy shouldered man with jet black hair, turn slowly, and stare in his direction.

The black haired man looked at Einar briefly, made an imperceptible gesture with his head that indicated he wanted him to follow, then started strolling in the general direction of a relatively deserted corner of the yard.

Einar looked at Jeff, who nodded slightly and looked meaningfully at the black haired man's back. Einar dipped his head, stretched as though tired, and slowly moved after the man.

The black haired man finally stopped against the wall. Einar looked doubtfully up at the guard stationed in a small wooden shack a few feet overhead. The black haired man glanced casually up at the wooden faced guard.

"Come on over here," he said to Einar. "You don't have to worry. He's one of us." He smiled at Einar as he approached. "So you're the new recruit," he said softly. "Good boy. You won't regret it. We're going to succeed. Got to, or this war will go on forever. I'm Don Welles. You're Einar Tharnsen. I'm not the big boy in spite of what Jeff said. Nobody will know who the big boy is. Maybe he's that guard up there!" He grinned. Suddenly he held out his hand. When Einar took it he shook hands warmly. "For peace," he said. "May she come soon."

"For peace," Einar repeated clumsily.

"Now listen carefully," Don Welles said. "The way we identify one another is by rubbing your eyes with your middle finger on your right hand. Do that occasionally at camp fifty where you're going, and watch the others. In a week or so you'll know which are with us. Two of the guards up there are. One of them is as big

as you. He's the one you're to sock after you've been there a few days. He has orders to give you the excuse. Unless you get instructions you're to do nothing except wait. Got it?"

"I guess so," Einar said.

"Good," Don Welles said. "And from now on you don't know me. And—when the revolution succeeds you won't have to worry. You'll be on top." As he said this he laid a hand on Einar's shoulder and looked at him sternly.

Then he was walking away, strolling as though going nowhere in particular. Einar stood where he was, watching him depart.

MARVIN looked up. Shoving his chair back he leaped to his feet, a pleased look on his face.

"Why you son of a gun!" he said. "How the devil did you get out of the hospital? And why did you keep it as a surprise?"

"I didn't," Neal said as Marvin took him by the shoulders and held him out at arm's length. "Dr. Ohrman just told me yesterday evening."

"Well," Marvin said, releasing him, "back in harness for you again, I suppose. Sitting on high and watching the poor wretches down below."

"Got time to have coffee with me?" Neal asked.

"I'll take time," Marvin said. "You girls hold things down while I'm gone."

He put an arm over Neal's shoulders and forced him toward the door while the WAAC personnel looked on, smiling broadly.

When they reached the sidewalk he sobered. "What's up, Neal?" he asked. "You got out awfully sudden—and you wouldn't have dropped in on me at the job unless you're going away. You'd wait and surprise me at the officers' club tonight."

"Any other clues, Mr. Holmes?"

Neal asked, a smile playing on his lips.

"As a matter of fact, yes," Marvin said. "You changed the subject without comment when I said you were going back to the old patrol job."

"You should be in M.I.," Neal said, smiling broadly. "You've missed your calling."

Marvin looked around secretively and brought his finger to his lips dramatically. "Maybe I am!" he said in a hoarse whisper.

"Soviet or U.S.?" Neal asked.

"Both," Marvin said brightly. "And am I making money! A savings account in three Kansas City banks—"

"They're under water," Neal said.

"Verkhoyansk?" Marvin tried.

"I believe you," Neal said. Grinning, he grabbed the arm of a passing M.P. and stopped him. "Arrest this man," he said, pointing at Marvin. "He's a Russian spy."

"Nyet nyet!" Marvin said. "I'm on vacation yet. Py the vay—" He sidled up to the now grinning M.P. "Are you a Comrade? Nyet? Too pad. Ve could drink wodka ofer old times."

"He has a savings account in Verkhoyansk," Neal said.

"Money?" the M.P. said. "That makes you a capitalist. On your way before I report you to the I.R.B."

"Comes the revolution, Comrade!" Marvin said, glowering at the M.P. and pushing Neal ahead of him down the street.

The M.P. watched them, the smile on his face just a bit nervous. Superior officers didn't usually behave that friendly toward enlisted men.

"Know where you're going?" Marvin asked, his face suddenly serious.

"Officially no," Neal said.

"Unofficially?" Marvin looked at him questioningly.

"If we hadn't been kids together back in Spokane I wouldn't tell even

you," Neal said. He waited until there was no one walking within earshot. "I'm being sent to New Mexico."

"Patrol duty?" Marvin asked. When Neal shook his head Marvin uttered a soft low whistle of amazement. He turned to Neal, suddenly unbelieving. "But you're just out of the hospital! What's the matter with them?"

"My reflex and fatigue indices were changed by the nerve virus or the cure, they don't know which," Neal said. "They don't know how long it will last so they want to use me while it's there."

"Then that's it," Marvin said, his face filled with wonder and hope. "They're ready to use men."

"I guess it means that," Neal said. "It's been a public secret that they've been all out for space travel since right after the outbreak of the war. A year ago there were reports of an atom explosion on the Moon, but the Government announced officially that no American rockets were yet advanced enough for that, and if it had happened it must be the Russians."

"It could have been, too," Marvin said. "Watch out when you get up there."

"If I get up there," Neal smiled. "My assignment may be a desk job, for all I know."

"How's Charlie taking it?" Marvin asked.

Neal frowned. He started to speak several times. Finally he said, "I feel terrible about him. I—shot off my mouth at him. Go up and see him, will you? I feel like hell about it..."

"Of course I will," Marvin said, pushing open the door to the canteen.

"**A**ND," MARVIN said when they were comfortably seated by a window, "if you get a chance, take a look at Amarillo and write me what it looks like. You might even keep

your eyes peeled for Thelma. She's a tall blonde, kind of—"

"I know," Neal said. "Statuesque. You showed me her picture, too." He smiled. "If I find her I'll tell her how you died bravely, and on your death bed you made me promise to find her and give her a good time. And *will...*" His voice trailed off as his eyes widened with surprise.

Marvin turned to follow his gaze. Frances, the nurse, was standing in the doorway across the room, searching over the crowded room. Her gaze jerked in his direction almost psychically. Her face lit up with recognition, then settled into grinness as she started over.

"Trouble, Neal," Marvin muttered. "What the hell did you say to Charlie?"

"I told him she was in love with him and if he wasn't a coward he'd face life and marry her," Neal said under his breath. "This is the first time in my life I felt an irresistible urge to find a hole and crawl into it. He just struck me wrong, worrying about me and Frances after I left."

"Well, you've got it coming so take it," Marvin muttered out of the corner of his mouth as Frances came up to their table. Then, brightly, "Hi, Frances. Come to say goodbye to the girded warrior?" He grinned at Neal.

Frances's eyes were on Neal, wide and staring. Abruptly she leaned forward, gripping the edge of the table. "What did you say to Charlie Adams before you left the hospital, Neal?" she demanded.

Neal watched his finger making small circles on the table top. "Why—nothing much," he said. "I just—"

"Go on," Frances said, her voice controlled fury.

Neal looked up at her helplessly, then dropped his gaze back to his wandering finger.

"—told him that I wished him luck, and—and sort of hinted, indirectly, that you were in love with him and he should—"

"He should what?" Frances demanded.

"Well, sort of try real hard to master the mechanical legs and—" Neal's finger stopped tracing. He looked up. "I'm sorry, Frances. I made an ass of myself. An utter stupid ass. If there's anything I could do to undo it I would. I wish I could blame it on the nerve virus, but it was just plain stupid reaction without thinking. He was worrying about what would become of the romance he imagined was budding between you and me. I couldn't leave him with that, being a martyr..." His eyes were half angry, defiant.

She continued to stare at him, her expression unchanging. Something in her eyes alarmed Neal.

"What's happened?" he asked. "My God! Don't tell me he tried to kill himself!" He half rose from his chair, horror on his face.

The answer was on her face.

Marvin moved suddenly and was up, his arm around Frances's shoulders.

"Come on, Neal," he said gruffly. "We're going to the hospital. And you're going with us, Frances, and we're going to straighten this thing out. It's your fault in a way, too, you know," he added sternly. Out on the sidewalk he asked, "How'd it happen? Or do you know?"

"He c-crawled out of b-bed and dragged himself to the win—" she couldn't go any further.

Marvin was hurrying her almost at a run to avoid the curious stares of passers-by. Neal was keeping pace, an expression of misery etched into his features.

When they entered the hospital Frances shrugged off Marvin's hold

and dried her eyes, holding her head erect with a semblance of her old professional calm.

She led them to the ward Neal and Charlie had occupied. The door was closed. She opened it. Marvin and Neal saw that Neal's bed was made up and empty. Screens were around Charlie's bed.

Neal's face cramped queerly at the sight of doctors' feet under the bottom part of the screen.

Noiselessly, her face infinitely sad, Frances went to the screens and pulled them aside enough to peek in, with Neal and Marvin crowding behind her, holding their breath.

A SHEET covered Charlie up to his chest. He was flat on his back, his head turned sideways with his face against the pillow. Beads of perspiration dotted his forehead. His eyes were closed and his lower lip sucked in between his teeth.

Dr. Green was taping Charlie's arm against his chest while Dr. Ohrman held it rigid. In a moment they finished.

"That should hold it until we can get him through X-ray," Dr. Green said, his voice cheery. "Come in and give him another two c.c.'s of the same sedative in an hour. See that he gets plasma. And get a nurse in here!" The last was politely exasperated.

He half turned, then noticed Frances.

"Oh there you are, nurse," he said. "Where have you..." He stopped talking when he saw Frances wasn't even hearing him.

Charlie had opened his eyes and jerked his head around to look. His eyes rested on Frances for a moment, went past her to Neal. He turned his face against the pillow again and closed his eyes, his expression agonized. After a moment he forced his

eyes open again and turned his head with slow deliberateness to face them.

"Hello, Neal," he said weakly. "Come on in."

Neal looked at Dr. Green for permission. Dr. Green dipped his head in unwilling acquiescence and pushed the screen back to make more room.

"What's this—" Neal began. He stopped, with a feeling that anything he might say would be worse than saying nothing. He went very slowly past Frances and stood beside the head of the bed while Charlie kept watching him.

"I guess they told you, Neal," Charlie said. "I'm sorry. I wanted to wait until you were gone so far you wouldn't hear about it, but I couldn't."

"You shouldn't have," Neal blurted. "You had everything to live for." He turned his head and looked at Frances, a grim light in his eyes. "You still have."

"No, Neal," Charlie said. "Remember I said the world was like a man who's lost his legs? After you left this morning I realized it was. Only it's just an unthinking jumble of humanity and doesn't comprehend what's happened to it. I know what's happened to me. I won't let Frances tie herself to a cripple who will have to walk around on metal legs and smile and be proud of being able to walk!" He was speaking too loudly.

Neal was twisting in mental torment.

"You'd better go," Dr. Green said, but no one heard him.

"And you just think she loves me," Charlie went on. "I know. You think she loves me, and you wanted to get out of the picture so you wouldn't be taking a girl away from a helpless cripple—"

"Shut up!" Neal shouted. "Damn you, Charlie. Don't you know? I'm married! I don't love Frances. She doesn't love me. She loves you, and

you'd better get the guts to face it. Running out will only break her heart. What the hell do you think love is, anyway? La de da with perfumed lace?" He glared down at Charlie, his fists working at his sides, his face contorted into a mask of self torture, regret for what he couldn't stop before it was out.

Suddenly Frances pushed past the screen and sank to her knees by the bed.

"He's right, Charlie," she said. "Oh, darling, you poor deluded darling." Her eyes were brimming with tears as they locked with his, and his were looking up out of the depths of the death-wish to the first rays of the sun, rising above the horizon of Life.

Neal sagged with a reaction of weakness. Marvin gripped his arm. "Let's go," he muttered against Neal's ear. He led Neal unresistingly toward the door.

THE SOUND of the truck became different. Einar awakened with a strong impression that it had stopped, but it hadn't. It was going faster. The tires were humming. There wasn't any slow upheaval as bumps were taken. Instead there was the rhythmic thud of tires thumping over regularly spaced tar expansion joints in concrete.

He stood up so as to see over the body of the truck through the heavy wire mesh that kept him and the other twenty assorted prisoners from escaping. What he saw made him oblivious of the man who had sat next to him slumping down and occupying his seat.

He might have been in California or the Delta country of prediluvian Texas. Mathematically exact rows of young trees whizzed past, stretching back from the highway to be lost in the distance. Verdant alfalfa grew to luxurious depths in between the rows

of trees. And the highway itself seemed to be of real concrete—not steel grill or packed mud.

Einar stumbled over sprawled feet of sleeping men to where he could look alongside the driver's cabin.

"It is concrete!" he muttered incredulously.

What had happened? Had it all been a vivid dream? A mile ahead he could see signs of a city of some kind. A billboard flashed by. It was gone as he noticed it, so he couldn't catch what it said. He watched anxiously for another one to appear. In a moment it did.

One mile to New Fernando, the capital of Foxe Basin, it read. *Pop. 13,487.*

There was more on the sign but it was gone before he could read on.

"Looks just like home, doesn't it," a quiet voice at his shoulder said.

"Yes!" Einar said. He stared in fascination at a service station they were passing. No cars were at the gas pumps, but near the grease rack was a glistening black sedan with its hood raised and the coveralled posterior of a service station attendant bent over a fender. When it was gone he turned to the man who had spoken. "How'd this get here?" he asked. "I thought there was nothing but mud and people up here yet."

"This was put in last year by private capital," the man said. "I remember reading about it. It was when everybody was thinking this upset of things wouldn't be as bad as it is. Foxe Basin is Canadian though. None of us get to come here and stay."

"Oh," Einar said, disappointed. "I thought maybe..."

"Ours will be just as good when they get going," the man said. "Give us another year. Or even more. Personally, I want to settle somewhere in Baffin Bay. The soil is really rich there. Plant alfalfa and soy beans

there as thick as they'll grow for five years to get all the salt out of the ground, and then you have something—besides a small fortune from the alfalfa and soybeans."

"I guess this's on the way to camp fifty," Einar said. "I wonder where it is?"

"It must be on Baffin Island," the man said. "I studied the geography up here pretty well. Base is just west of the southern tip of Southampton Island and we're headed northeast right now."

"I'm glad we passed through this," Einar said. He rubbed his eye with the middle finger of his right hand slowly as though it were an absentminded habit. "It shows me what can be done up here. Maybe things won't be so bad after all up here."

"Heck no," the man said. "It's a new frontier. Just like Oklahoma and Kansas were at one time. In ten years there won't be no difference. Concrete highways, roadhouses, railroads."

"But farther south," Einar said. "Why don't they fix that up too instead of making us walk through it all?"

"Some kind of treaty with Canada maybe," the man said. He watched Einar rub his eye again with his middle finger. "Something in your eye?"

"Yeah," Einar said. "I think it's out now." He lowered his hand. "What about this treaty with Canada?"

"I think the United States and Canada must have made some kind of a treaty to allow us to come up here," he said. "I don't think the U. S. would let a few million of its citizens become Canadians without a struggle."

"I thought it was just part of the war setup," Einar said. "Canadian and U. S. defenses were combined, and industry, too. When everything's settled down they'll straighten it out."

"Oh," the man said. "Maybe that's

it." He was studiously silent for a minute. Suddenly he chuckled. "I was just thinking," he explained. "Suppose Canada insisted that we become citizens. There's only about eleven or twelve million Canadians, and there'll be a lot more than that of us. Then we could vote Canada into the U. S. and they couldn't stop it!"

"Could be," Einar said. "I wonder how things *will* be when it's all over? Somebody told me before I started up here that I was a fool to come. When the atom bomb weather gets back to normal it'll freeze all year round up here again."

"Naw," the man said. "That won't happen. Maybe in a few centuries but not in our lifetime. It's going to be just the other way around. They'll have icebergs at the equator and summer all the time at the poles."

"How do you figure?" Einar asked.

"Things are going back to the way they were during the ice age," the man said, looking at Einar owlshly. "They've found plenty of evidence that at one time the human race lived in the north. I think the Garden of Eden was at the North Pole, and mankind spread from there."

"What's your name?" Einar asked, suddenly interested in the man.

"Harry Drake. I'm from Kansas City."

"I'm Einar Tharnsen. I came from Cincinnati."

"Oh! Just like me!" Harry said. "Your home town's under the ocean."

"Yeah," Einar said. "Tell me, Harry, if the birthplace of man was at the North Pole and there was an ice age, how do you tie them together? When the glaciers extended all the way down to the United States—"

"There weren't any in the Arctic then," Harry said. "They were piled up in the temperate zone and maybe even on the equator. The air currents were reversed then just like the atom

bombs reversed them. Ever see a whirlpool form in a washbasin? You get it started and it keeps going by itself. Stick your finger in and stir the other way. It makes things boil around for a minute, then presto! You have a nice stable whirlpool going in the opposite direction."

"But that isn't—" Einar began.

"Yes it was!" Harry said. "I read all about it and that's exactly what took place. The way things were before they exploded the atom bombs in Europe, starting about a hundred miles up off the surface there was a steady wind from the equator toward the North Pole all the time. There the air went upward, and about five hundred to a thousand miles up it went the other way, toward the equator. When it got there it came down and started back toward the pole. The atom bombs blasting in Europe hit down hard enough to blast everything. But what they didn't stop to think was that it hit up as well. And every time one of them hit up it raised hell with the upper air currents. And finally it split the big whirlpool into two smaller ones."

"It did that all right," Einar said, "but you've got the rest wrong. It went the other way. A hundred miles up it went south, and a thousand miles up it was going north."

"No, *you* got it wrong," Harry said. "Anyway it doesn't make much difference. The idea is the same, and the end result is the same. Don't you see? Now the same upper air currents exist in the temperate zones as did exist at the North Pole! And before long there won't be anything at the equator except ocean, so the only place there'll be for people will be the Arctic! That's why I'm going to settle as far north as they'll let me. Watch and see, Einar. In ten years they'll be having arctic weather all over the U. S..."

"What about the southern half of the world?" Einar asked. "The atom bombs in Europe couldn't have upset the air currents down there."

"Who cares what goes on down there?" Harry said. "All I care about is what's going on up here! And anyway," he added triumphantly, "there never was an ice age in the southern hemisphere!"

"Are you sure?" Einar asked.

"Sure I'm sure," Harry said, "or they would have mentioned it along with the ice age in the northern hemisphere. So it doesn't make any difference."

"What do you mean, it doesn't make any difference? We should have gone south instead of north!"

"Not enough land," Harry said, shaking his head. "Have you looked at the maps? The eastern half of South America is going under water. So is two thirds of Africa and nine tenths of Australia. And half of China and nearly all of India are already so far under you can sail an ocean liner to Tibet."

EINAR TURNED and watched the trim orchards of Foxe Basin whiz by. A frown settled on his face. How much of what Harry Drake had said was true? Probably almost none of it. But if it were? He wished he'd read more, kept up more. But—

The question rose into full clarity in his thoughts. Was what was going on a mere repetition of the history of the Earth a few hundred thousand years ago? Was there, in that remote era, an atomic war that drove fleeing remnants of a global civilization to the north through a thousand miles of mud, to later migrate southward and build up modern civilization?

His eyes went toward the low lying hills far ahead on the highway. Baffin Island, according to Harry. Maybe he'd uncover something interesting

with his shovel....

Then, abruptly, he remembered something more important to him than prehistoric civilizations. He turned around and studied the faces of the men in the truck with him. One of them looked at him sideways, then with apparent absentmindedness brought his hand up to rub his eyes with the middle finger of his right hand. Einar moved to join him and get acquainted.

"Hi," he said as he sat down on the floor of the truck beside the man. "Wonder how much longer we'll be cooped up in here?"

"'S long as they give us chow regular I don't care," the man said cheerfully.

Einar studied him openly. The man was barrel chested, and with the silkiest jet black hair he had ever seen on anyone. His face was round, with a smooth flawless skin.

He was studying Einar just as frankly.

"I'm George Lord," he said.

"I'm Einar Tharnsen," Einar said. "Why don't you take a look outside? They've got nice orchards started here. In a couple of years they'll be supplying all the fruits the northland will need."

"It doesn't interest me," George Lord said. "I'm just interested in mud."

Einar frowned. George Lord seemed to be laughing at him down underneath, though on the surface he seemed just friendly. He looked away and slowly rubbed his eye with the middle finger of his right hand, then looked back casually. George's deep brown eyes were twinkling.

"I was watching you up front with Gabby," George said.

"Oh," Einar said, getting the hidden meaning. He smiled ruefully. "His name's Drake. He's from Kansas City. Harry Drake. He has a the-

ory that in ten years there will be glaciers down around the fortieth to the fiftieth parallel like there were in the ice age."

"That's right," Harry's voice intruded. Harry squatted down in front of Einar and George. "There'll be a ring of ice in that band, all around the world. South of it will be nothing much but ocean..."

Einar closed his eyes. After a while Harry's voice put him to sleep. When he awakened, the truck was in the jouncing rolling rhythm once more, and moving slowly. He found he was draped against George Lord's side.

With a muttered apology he straightened. George looked at him with the same twinkle in his eyes that he had had before.

"Have a good sleep?" he asked. "We'll be there pretty soon now. The guard up with the driver passed the word back about five minutes ago."

Einar struggled to his feet, gripping the wire mesh covering of the truck to steady himself. Outside the truck was nothing but dark mud and occasional rock outcroppings. Here and there were ridges of round pebbles where the mud had washed away with the melting of the eternal ice.

Ahead and drawing nearer was a high steel mesh fence that stretched to the right and to the left to disappear over nearby hills. The truck was headed toward a large double gate and a quonset hut.

The gates were even now being swung open by two men in military uniform. Two jeeps were parked beside the quonset.

Einar kept his eyes on the soldiers as the truck he was in passed through the gates and headed toward a distant low line of dark bulk which, though the same color as the mud, was obviously the collection of buildings of labor camp number fifty.

A few minutes later the buildings

had resolved themselves into distinct structures. The prison block with its three story buildings and long high wall interrupted with small shacks for the guards along its upper rim. The neat office building set apart from the prison. The mud block mills. The garages and repair shops with road equipment parked, waiting to be repaired or ready to be returned to the job.

The truck was heading for the prison block. The solid metal gates in the wall were pulled aside. Guards were standing in the yard waiting to handle the newcomers.

Einar kept his eyes on the guards as the truck passed through the gates. There were four of them. Would one of them be the guard he was supposed to sock? He found himself swallowing loudly.

"Let's try to stick together, Einar," George Lord said in a voice that wouldn't carry. "We'd be better off as cellmates."

"Okay," Einar said without turning. He was studying the guards, waiting for one of them to give the secret signal.

The gates slid shut. One of the guards unlocked the tailgate of the truck so the prisoners could slide out to the ground. And still none of the guards had rubbed his eyes with the middle finger of his right hand.

"Tough looking guards," George commented.

Einar turned and looked at him. His eyes were still twinkling.

"Yeah," Einar agreed. "Tough."

He got down on hands and knees and slid out of the truck.

"SO LONG, Neal," Marvin said, gripping his hand. "Don't forget, if you have a chance to look for that woman of mine and find her, tell her to write. Give her my P.O. address."

"Sure," Neal said. He smiled, but after Charlie and Frances, he couldn't bring himself to do any kidding. "And I'll write you. I'll tell you everything. If the censor cuts the pages to ribbons it won't be my fault you don't know what's happening."

They released hands. Neal climbed into the cockpit of the jetfighter. Five minutes later from control tower Marvin watched it take off, its booster rockets throwing off mammoth twin trails of smoke that suddenly terminated high in the clear blue sky as they exhausted their charge and were discarded.

In the plane Neal looked down at the bleak monotony of the drab landscape with a feeling of nostalgia. To the left he could see the trail of human ants. Ants whose hill had become flooded, and were moving to a new site for their colony. Almost directly underneath was a caravan of busses plodding along—or were they stopped? There was no way of knowing. The jet with its eight hundred and fifty miles of airspeed left them out of sight behind before they could have travelled a hundred yards.

"Have you seen Chicago?" the pilot asked. "It's still a going concern. New York had to give up and be abandoned. Too many of the skyscrapers were weakened by the big waves coming in off the Atlantic. But Chicago's been building waterproof walls against its big buildings as fast as the water rose."

"Is it much out of the way?" Neal asked.

"Not much."

Below, the black landscape changed. Miles of forest land slipped past. Here and there, becoming rapidly more common, were geometric diagrams spread out—the farmlands of Canada.

And then, suddenly, there was nothing but the lead gray of water underneath. Lake Superior. Only now

it was no longer a lake, but the northernmost reaches of the Mississippi Sea. For an instant there was a brief view of house roofs sticking above the surface, and the twin spires of a church.

"That was the old shoreline," the pilot said.

Neal watched the water. From twelve thousand feet it looked like sheet steel. It was hard for him to imagine that three years ago this would have been the farmlands of Michigan or northern Wisconsin, and even a year ago there were still large sections of dry land.

"There's Milwaukee," the pilot said, nodding toward it.

Neal looked. A few buildings rose from the water, with white breakers washing against them. He studied it until it was far behind, then turned to look ahead, and there were the familiar outlines of Chicago.

"Up until six months ago they could still use the elevated tracks," the pilot explained. "The depth of the water now is forty-seven feet."

He had dipped down and was making a circle around downtown Chicago. Neal could see hundreds of small boats with V-shaped wakes behind them.

"Looks like the motorboat has replaced the automobile," Neal grunted. "But what do they want to hang on for? Chicago can't be of any use any more without its railroads."

"Well," the pilot said. "They have about two million people here yet, and they're trying to become self-sufficient. They have three atom power plants. Half of what used to be offices is now converted to hydroponic gardens." He shook his head sadly. "But if the water comes up much more they'll have to flood the bottom levels or the pressure will push in the walls. They've had to flood a couple of buildings already."

He straightened out toward the southwest and went into a slow climb. Shortly Chicago was left behind. A few minutes later a land mass could be seen far away to the left.

"The Ozarks," the pilot said. "Tough down there. People wouldn't stay away. Flu epidemic now." He was silent for a while. The Ozark Islands moved around to the east. "Look down there," the pilot said.

Neal looked down where he pointed. Two stern paddle ships were there, pointed west.

"They're loaded with people going that way," the pilot said. "They'll take them to the Rockies. On the trip back they'll bring cattle to be butchered."

Abruptly there were clouds underneath. An hour later the plane dipped into them for a precarious landing on a rain drenched airstrip.

A JEEP with a flexible coupling towed the plane to a hangar. The huge hangar doors were sliding shut against the wind driven rain as the pilot slid back the cowlings so Neal could stand up and stretch.

In a far corner past a partly dismantled passenger liner sporadic blue flashes from behind a partition told of a welder at work, and added an eerie touch to the scene of quiet industry.

Three men in the uniforms of majors were approaching. There were welcoming smiles on their lean faces. Neal watched them, sensing a difference in atmosphere. This was Army. This was Air Force. It was divorced from human misery and rivers of human ants. It was an island of something he hadn't seen or felt during the year and a half he had been in the north.

Eighteen months fell away. Neal stepped out of the cockpit onto the wing and dropped lightly to the

smooth concrete floor, a smile of pleasure lighting his features. He came smartly to attention and saluted. Then the three men were introducing themselves. Majors Mark Andrews, Steve Davis, and Milt Altman.

They were moving toward the side of the vast cavern of industry while somehow they were getting out of him the details of his trip and a rough sketch of conditions *up north*.

"We have a way to go yet, Neal," Major Steve Davis was saying.

"But Chicago!" Major Milt Altman murmured.

And then they were closely jammed in a covered jeep on a concrete highway where huge raindrops bounced against the pavement in the light of the headlights, and a huge truck passed them going the other way, with its retinue of impatient sedans strung out behind.

Hills and wide curves, and a brief dip into a two block long street with a neon lit supermarket and a brief glimpse into bright windows with almost alive ladies in trim housedresses under a large *Grayson* sign.

"The death toll's been terrific," Major Mark Andrews said with impersonal sadness, his face lit up briefly by the *Phillips* 66 sign of a busy service station. "Considerably over a million in the Mississippi Valley. China and India are the worst hit of all though. An estimated five hundred million dead from floods and the oceans going inland alone."

Red blinkers ahead in the rain. Slowing down to a crawl past a wrecker pulling a sedan out of the ditch. Wild weaving around slower moving cars up a steeply climbing switchback. Abrupt braking to almost a stop. A slow lurch across a ditch. A brief glimpse of a shack and a soldier in raincoat with a rifle.

Lurching, occasional skidding. And

always the pounding of the rain on the roof.

And then, abruptly, like something in a dream, a flash of lightning driving its jagged course down from above to terminate at the peak of a trim pointed shape rearing from the unseen vagueness of the ground, up and up, until Neal's mind reeled in unbelief.

"God, that was beautiful!" he breathed.

"Like it?" Major Steve Davis murmured smugly. "You've had your first glimpse of—your ship."

"My ship?" Neal echoed, incredulously.

And then the jeep had skidded to a stop just under a roof. Mark Andrews had opened the door and was holding it open for the others. Beyond him was a large window. Inside were tables with men and women in uniform, eating. Faintly the sound of music drifted out to vie with the noise of pelting rain.

"A cup of hot coffee ought to feel good to you after your long trip," Major Milt Altman was saying....

"COME IN!" Neal shut off the water and went to the door of the bathroom, draping a towel around his middle. "Oh, good morning, Major Andrews. I'll be with you in a minute. I'm about to take my second tub bath in a year and a half. Up north there's nothing but showers."

He ducked back into the bathroom. Mark Andrews came in leisurely and leaned against the washbasin.

"I guess all this is quite a treat to you, Neal," he said. "Any contact with the enemy up there? But of course! I'd forgotten how you came to be here. You're credited with shooting down one of them, too. And in one of those unwieldy jetcoptors, too! Quite a remarkable feat. Speed it up a bit, General Walters is expect-

ing you at nine, and you'll want some breakfast first."

"He can wait," Neal said, grinning from his small sea of suds confined in gleaming white porcelain contours.

"That's treason," Mark murmured, lighting a cigarette. "By the way, I hope your reflexes are still with you? You're going to need them before long."

"I suppose they are," Neal said. "Personally I can't tell. I don't feel any faster than I ever did."

"You wouldn't," Mark said. "We'll soon find out. First on the agenda this morning is raising you to the rank of Major—which is the equivalent of yardbird in O.X."

"O.X.?" Neal said.

"Operation Extraterrestrial," Mark said.

Neal paused the barest fraction of a second, then went on lathering his shoulders.

"Light me a cigarette, will you Major?" he said.

"THESE WILL be the pictures we took, Major Loomis," General Walters said. "Our Underground Intelligence in Siberia got word out that the attempt was to be made. We readied Palomar, and were quite fortunate."

The lights went out and the screen lit up. Neal watched in fascination. There was a ship. It jumped around as though whoever held the camera were swaying unsteadily.

"Air currents," the General commented. "The moon was low on the horizon. Evidently the Russians tried to time the landing so that we couldn't observe it. If so, they neglected to take into account the fact that refraction of the atmosphere enables us to see the moon for quite some time after it has set mathematically."

The ship was pointed into the

screen at a sharp angle. Soon it began to swing about until it was broadsides. At the same time the edge of the moon appeared in the picture, blinding white, then adjusting to lesser light and more detail.

The ship continued to swing about while it fell rapidly toward the moon. Abruptly a stream of fire shot out from its stern.

"Deceleration," Major Steve Davis commented. "Watch. You're going to have two days of tough drill on this. You can get the idea firsthand from the picture."

Neal watched, trying to imagine himself inside such a ship, dropping down toward the moon or any other body. It was beyond imagining. Rapidly, too rapidly it seemed, the cigar shaped ship rode down on its tail of fire.

"Very delicate instruments are in operation now," General Walters said in a low voice. "The slightest deviation from the downward direction sets up a tangential velocity that must be annihilated before the ship reaches the ground—or it will land with a sideways velocity and topple over, as you will see shortly."

"Those feather touch adjustments are handled by automatic devices," Mark Andrews said. "But even they aren't perfect. Human reflexes and eyesight are faster—in your case."

Neal didn't answer. He was watching the ship on the screen as it dropped closer and closer to the now distinguishable lunar surface. There was a full minute of perfectly clear picture during which the ship could be seen undistorted, even to the hammer and sickle emblem on its glistening side.

There was a final moment during which the fires of its rocket tail were thrown back from the surface to seemingly engulf it. These ceased. The ship emerged to view, toppling over

with unbelievable slowness, while the dwindling gases flowed outward along the lunar surface in wavelets until they dissipated into invisibility.

"You understand, of course, Major Loomis," General Walters said as the lights were turned on, "that this is the country's most guarded secret."

"You can imagine the effect on the morale of the people," Milt Altman said, "if they knew that Russia has already reached the moon."

"Were there men on that ship?" Neal asked.

"Yes," General Walters said. "We won't take time to show you the whole collection of films. You have too much to do during the next three days before—" He stopped, biting his lip. "Major Andrews will take charge of you for the next hour," he added. "His job is to teach your body its proper reflexes under laboratory conditions closely approaching those you will encounter on the ship. That's all here in the projection room." His tone forbade further questioning.

NEAL FELT the muscles of his face sagging downward. He tried to lift his arm as the light on the instrument panel in front of him flashed red. His arm came up slowly. Too slowly.

"Get your elbow against the back of your seat," the voice of Mark Andrews came through a small square grill on the panel. "That way you aren't fighting the drag against your whole arm." Neal obeyed and found it much better. "Now let's try it over."

The red light blinked out. Neal dropped his arm and rested. The red light blinked on again. This time he was able to reach up and press the button that shut it off.

"Good work!" Mark said. "That topped the best mark set so far. We'll try it again, then have some varia-

tions and see how you'll do...."

"ANALYZE specific sensations,"

Steve Davis said. "For example, I can tell three gees by a sensation from my left earlobe. At three and a half, one of my teeth aches a little. Just sit and watch the dial and connect your sensations to the acceleration. By day after tomorrow you have to be able to tell to within a tenth of a gee what your acceleration is—or we don't dare entrust the ship to you. We know what it takes to handle it, and you've got to have it *before* you lift her off the ground."

"I'm a little tired," Neal said. "Let's take a breather."

"Uh uh!" Steve said. "You're going to be tireder than that all the time upstairs. Get used to it. It's part of your training..."

"LIE DOWN here. Quickly!"

The doctor pressed the stethoscope against Neal's chest. He listened for a moment, finally nodding his head and taking the stethoscope away.

"Good," he said. "Unbelievably good. Now the fatigue test and we're through for the day."

Neal rested his hand, palm upward, in the clamp. One finger fitted through a wire hoop. The doctor fastened the cover down.

"Start!" he said.

Neal lifted his one free finger against the resistance of a spring and let it drop. Raised it and let it drop....

"THIS IS the schematic diagram of the ship," Milt Altman said. "You don't get much from it except the general arrangement of things. There are four main parts to notice right now. The rocket, as you can see, is something really out of this world. I don't think the Russians

have it in theirs. Atomic. We wanted a neutron beam but had to be content with protons. The beam is really about eight percent deuterons. The fuel is forty percent pure plutonium in the form of number twelve gauge wire. It's fed through the barium oxide reflector block which is really a long solid rod two feet thick, encased in a laminated steel tube, and screw-fed along the tube as it's eaten away by the bombardment of exploding atoms against it.

"And here's the gyro setup at the center of gravity..."

"CONGRATULATIONS, Major Loomis," General Walters said. "The reports of your progress are everything we had hoped for. Ah, we're having a little party for you after dinner. Your orderly will make sure you are dressed properly."

"I wish you hadn't, sir," Neal said. "I'm exhausted."

"Nonsense! By the time you've showered and eaten and put on full dress uniform you'll feel differently. Major Andrews will call for you at eight-thirty."

"Yes, sir," Neal said. He saluted, turned smartly, and went to the door...

"Don't feel so good?" Mark Andrews said sympathetically. "It's nerves, I know." He went over to a blonde wood cabinet and opened it, revealing an array of glasses, bottles, and the door of a very small refrigerator. He looked slyly up at Neal and smiled at the expression of surprise he saw there. "Didn't know you had a liquor cabinet in your quarters, did you? As a matter of fact it isn't standard equipment, but we wanted you to have everything. We're pinning a lot of hope on you."

IT WAS a large hall, fully fifty feet across either way. Folding chairs

were stacked up in six foot high tiers along two walls. On the far side, on a raised platform, was an orchestra. Neal's eyebrows shot up as he recognized Joel Cartier, the most famous of bandleaders, wielding the baton.

"They flew him all the way from Appomattox for tonight's party," Mark said at Neal's shoulder.

General Walters was coming toward him, a broad smile wrinkling his features into a mask of aged joviality.

"Was I right?" he asked. "You look great. I can't understand why you weren't made a major long ago. You look the part."

"Thank you, sir," Neal said. "I think you were right. I'm sure I won't regret a last—ah—fling."

"Fling?" General Walters threw back his silver gray head and laughed. "Yes," he said, sobering suddenly. "Tonight is yours. Do what you wish. Tomorrow you go into training seriously. Two days of that, and then—the cold gray dawn."

Neal looked at Mark, who lifted his eyebrows meaningfully. The General had had a little too much to drink.

"Well," General Walters said, coming out of the reverie he had momentarily fallen into, "have a good time. I must hurry back to my niece."

"Yes, Uncle?"

The three men turned. Neal caught his breath.

"Aren't you going to introduce me, Uncle Fred?" the girl asked, looking into Neal's eyes.

"Why—why—of course. Naturally, my dear child. Major Loomis—my niece, Dorothy Walters."

"How do you do?" she said, but the words were obviously just for her uncle's benefit. She continued to look into Neal's eyes. And somehow Major Mark Andrews and General Walters had faded away, and the

band was playing...

"You dance very nicely, Major," Dorothy said.

"It must be you, Dorothy," Neal said. "I haven't danced for—" He stopped as the wail of air raid sirens rose above the sound of the orchestra. "Which way is the bomb shelter?"

"Oh, we pay no attention to raids except to make sure of blackout precautions," Dorothy said. "Our fighter protection here is quite perfect—and if it isn't, we'll never know it. They've been trying to get O.X. since the very beginning."

Neal glanced nervously at the ceiling.

"Should we get a drink, Neal?" Dorothy suggested...

"UNCLE SAYS we can't take a jeep," Dorothy said as she slipped onto the vacant stool beside Neal. "The all clear hasn't sounded. They still have an atom bomber trying to get through to here with literally thousands of fighter support planes escorting it. This's the biggest air offensive they've thrown out in two weeks. Your glass is empty, Neal. Another?"

"No," Neal said. "I want to talk to you. Where can we go?"

"We could go to my apartment," Dorothy said gravely, "but we couldn't get past the desk. Uncle said this morning—or was it yesterday morning? Well, anyway, he said that they'd installed a liquor cabinet in your apartment. But why can't we talk here? Nobody'll listen anyway. They're all having too much fun by themselves."

"What's wrong with my apartment?" Neal asked. "But I guess you're right. Bartender!" He set his glass on the bar.

"It would serve Uncle right," Dorothy said.

Neal looked at her, puzzled. "What would?" he asked vaguely.

"If I went with you to your apartment," Dorothy said. "In fact, I've a good notion to. We could have just sat in the jeep without going anywhere..."

"Let's go," Neal said. "Though I don't think you're going to like what we're going to talk about."

He stood up. Dorothy linked her arm in his.

"Let's go," she whispered excitedly....

"I guess we could have talked back there," Neal said, fumbling inside the door for the light switch.

"This'll be much better," Dorothy said. "Here, let me find it." She reached past him and found the switch.

"God!" Neal muttered when they were inside. "I must have had an unbelievable amount to drink." He rubbed his eyes with his fingers, then took them away and looked at Dorothy who stood a scant foot away looking up at him, smiling.

"Dorothy," he said. "What I wanted to say was—I'm married. I don't know where my wife is—or even if she's alive. Haven't known for almost a year."

"Is that all?" Dorothy said softly.

"All?" Neal echoed. "Isn't that enough? I'm married. But damn it—" He stopped, lifting his hand to his eyes again.

"But—you love *me*?" Dorothy asked.

"I—I don't know," Neal groaned. "When I first saw you tonight something happened. Maybe it's just that in three days I'm going up in that spaceship. Maybe that's all it is."

"Suppose you weren't married?" Dorothy asked, placing her hands on his shoulders.

"If I weren't married maybe it'd be different," Neal groaned. "I wish

I could see Annette before I go up."

He brushed Dorothy's hands away and turned, stumbling over to the davenport and slumping down, burying his face in his hands.

"Neal," Dorothy said. "Neal! Listen to me. You aren't married." She walked over to him and shook him. "Neal! Do you hear me? You aren't married!"

"Huh?" he said suddenly, the meaning of her words sinking in. "What do you mean?"

She spoke rapidly. "They wanted to surprise you. They wanted to have Annette here with you these last three days before you go up. They turned the entire Intelligence Service into the job of locating her. They found her. She's dead. She died on Ozark Island almost a year ago in an air raid."

"I don't believe it," Neal said dully, lowering his hands and looking up at her.

"It's true, Neal," Dorothy said. "They didn't dare tell you. They thought—" She stopped, a horrified light coming into her eyes. "Oh, God!" she moaned. "What have I done?"

"Get out," Neal said.

"I love you, Neal," Dorothy said, her features cramping.

"Get out."

He watched her as she turned slowly and went to the door. She looked back at him appealingly. His expression didn't change. She opened the door and went out. It closed slowly behind her.

He looked at the closed door for several minutes. His features slowly lost their expression of grief, smoothing out. Finally he got to his feet and went to the bathroom and turned the water into the tub.

Then he looked at his reflection in the mirror—and smiled.

"Stone sober!" he said to his re-

flection softly, mockingly.

"SHUT UP, Gabby," George Lord said tiredly.

"I wish you'd stop calling me that," Harry Drake said in an injured tone. "I don't talk any more than anybody else—or if I do it's because I think of more to say."

"I never knew anybody that could think of less to say and take longer to say it," George said, grinning. "Pass me the salt—and don't start telling me all you know about salt."

"Reach for it," Harry said. He turned his attention to Einar. "What do you think, Einar? Were those human bones your shovel uncovered yesterday? They looked it to me."

"I don't think so," Einar said evasively. "In the first place they're too heavy."

"Petrified," Harry said. "I've seen petrified ivory in a museum. Handled it. It's the same exactly. And if they've lasted a million years under the ice they'd have to be petrified."

"Okay," Einar said, "but they could be the bones of a bear. We didn't find a skull. Anyway, it doesn't make any difference."

"The heck it doesn't," Harry said. "If it was human it bears out what I was saying on the way up here—that the human race lived up here once before the ice age. That means there'll be another ice age, and everybody'd better come north now."

"Let's go, Einar," George said, lifting himself up and stepping over the bench into the aisle between the long tables. He gave Einar a sharp look.

"Sure," Einar said, gulping the last of his black coffee and rising.

"Just a minute and I'll go too," Harry said. He started in on the last of his fried eggs and potatoes, saw that George and Einar weren't waiting for him, and abandoned his breakfast to scurry after them.

"He'll have a knife in his ribs some night," George growled. Then, hastily, "It's pretty soon now. I've got to talk to you—today."

"If it was human bones it'll be a nice thing for you, Einar," Harry said as he caught up with them. "Maybe they'll let you off with your minimum sentence in spite of your socking that guard. They should."

"Gaaa..." George said. He glared at Harry and stalked away.

"It's coming pretty quick now," Einar said out of the corner of his mouth.

"What's come over him?" Harry said, staring after George, then without moving his lips, "What do you want me to do?"

"He gets tired of your talking all the time," Einar said. "As a matter of fact, I get a little tired of it myself." Then, out of the corner of his mouth as Harry looked at him reproachfully, "Stay out of the way until noon so I can get the dope."

"Well, if that's the way you feel..." Harry said. He turned around and scurried back toward his place at the table. "Hey! Who swiped the rest of my breakfast?"

Einar hurried after George.

"How'd you get rid of the pest?" George asked in amazement.

"I told him I was getting a little tired of him myself," Einar grinned. "It hurt his feelings."

"Oh, that's a shame," George said. He lowered his voice. "We're all set for the day after tomorrow."

"How do you know?" Einar asked quickly. "What I mean is, why didn't they set it far enough ahead so that we could be sure we'd all act at the same time. This would flop if we got control here and all the other labor camps thought it was to be the day after."

"The warden's radio op is one of us," George said. "That was the

hardest job of all, getting our men in as radio operators at all the camps. He got the code yesterday and passed it to the guards that are with us."

"That makes me feel better," Einar said quickly. "That's one thing I was worried about. I was afraid if something leaked out, the radio op would be able to call for the army."

"Not a chance," George said. "Not only that, he's got a time bomb planted in one of the power tubes. If the radio's turned on and operated by anyone that doesn't know about it and how to keep it from blowing up—poof! No radio."

"Then everything's set," Einar said. "Day after tomorrow morning eight of us leave the breakfast table early and instead of going straight out to the jeeps we turn and run to the arsenal. It'll be open. We have a couple of minutes to get guns, then I fire a shot in the air. That's the signal for the riot back in the mess hall."

"That's enough," George said. "We both know how it goes from there. One of our guards shoots the warden. The other has gone from the arsenal as soon as we showed up, and will see that the guards in the block are delayed until we can all get armed and herd the other prisoners out into the yard. Pass the word along today and tomorrow."

EINAR brought the giant shovel over the waiting truck and released the trip that sent its load dropping, expertly placed. He swung the shovel around and brought up another scoop. His eyes searched the crumbling embankment for signs of anything solid too long and narrow to be stone. There was nothing but the black, claylike mud, heavy and totally devoid of vegetable matter except for the microscopic flecks of carbon that might have been coal at one time before it was picked up and

ground to an almost atomic dust by the grinding pressure of ice.

He brought the shovel to a stop and dumped the second load, filling the truck. As he swung the shovel away he looked idly at the number on the truck. Twenty-three. Harry Drake's.

The truck started up, went a few feet, and stopped. It started up again after a moment, went another few feet, and stopped again.

Its door opened and Harry dropped to the ground. The prison guard came running up. Einar saw Harry point toward the motor hood and shrug.

Another truck stopped in place for loading. Einar started to load it while keeping an eye on Harry and the guard. The guard talked to Harry a moment, then climbed into the truck. After a moment he got out and went over to the driver of the truck being loaded and spoke to him.

Harry wandered over and hopped aboard the shovel.

"Engine trouble?" Einar said, smiling.

"Yeah," Harry said. "God! I thought I'd never get that wire twisted in two. It'll take the mechanic a few minutes to find the break, but not long. Better not waste time."

"It's coming day after tomorrow right after breakfast," Einar said. "But we've got something we didn't expect. The radio operator is in on it."

"The radio operator?" Harry said, suddenly very serious. "How are we going to get this to GHQ? Are you sure? Those radio operators are screened pretty closely."

"George said every radio man in the labor camp setup is in on it—that they made that one of their prime objectives."

"We don't know for sure who to trust then," Harry said. "Even the warden himself may be in on it."

"There's orders to shoot the warden," Einar said.

"Then I'll have to try to get through to him," Harry said. "I can demand my rights and insist on seeing him. It might work."

"Let me try it," Einar suggested. "When I socked that guard he saw me to get my version of it."

"No," Harry said. "Your job is to play along with them until it's over. That's orders. I'll get to the warden and convince him. Then we'll take over the radio and get GHQ."

Einar shook his head. "The radio has a hidden bomb in it," he said. "Only the operator knows where. You'll have to get away in a truck."

"Leave it to me," Harry said. "I'll—" He began talking in a louder voice. "They'll find more bones around here. My guess is that this hill's an old prehistoric cemetery and there's lots of bones..."

EINAR SAT down, looked across the table at George, then questioningly at the empty place where Harry usually sat. When he looked up again George was grinning wolfishly.

"Pass the salt, Einar," he said. "I'm an impatient man, sometimes."

Einar picked up the saltshaker and held it out. George's hand was sure and steady as he wrapped his fingers around it. Einar looked up into his eyes and a chill shot through him as he realized what the man was trying to convey to him.

George had killed Harry! Had it been because he knew what Harry really was? Einar studied him through half-closed eyes. A suspicion that had lain dormant at the back of his mind emerged. There had always been a certain *something* about George that was out of place. It came to him now what it was. A well concealed arrogance. George Lord was a Russian

spy. The thought crystallized in Einar's mind, and a thousand little traits rose from memory to make it a certainty.

But that was neither here nor there so far as the outcome of things went. What mattered was that Harry was to have warned the warden, and Harry was dead.

"Knife?" Einar asked, holding out his hand.

"Huh?" George said, startled. He did a double take. Picking up his knife and handing it across the table to Einar he said, "Yes."

Einar forced himself to eat and be casual while his mind searched frantically for some answer. GHQ had allowed him to follow his own plans in this. He had staged the fight and been arrested so that no one could possibly suspect him of being a secret operative. Harry had been assigned to accompany him to camp fifty when it was certain there was something definite being plotted.

Now everything was falling into place like the parts of a jigsaw puzzle. George Lord was the key man, the Soviet spy in charge. He had come to this advance labor camp so that it could serve as his base of operations after the revolution succeeded, and while the revolutionaries were still battling the small land army farmed out up here to help the refugees get settled.

It could succeed—if GHQ didn't know when the blow would fall. Five thousand Russian jet fighters and troop transports were ready for the thrust.

Einar forced the last bite of fried egg down and stood up. George stood up too. They met at the end of the table and walked casually toward the exit.

"I'd have done it tomorrow anyway," George muttered. "But I decided not to wait. I'll be too busy to-

morrow to worry about that."

Einar shrugged. "It's fine by me," he said out of the corner of his mouth. "It could ruin things if they put us all in our cells while they investigate the murder though."

"They won't," George said. "They want the mud bricks too much."

He was right. Einar knew that. They had to have them. They were sentencing anyone able to work for the mildest of offenses so that they could get workers enough to turn out the millions of blocks it would take to convert this vast wasteland into the beginnings of a liveable country. It avoided the technicalities of setting up a vast civilian army of workers, and what was more important, took a crippling load off the already bankrupt Government treasury. Kept the vast population moving to the north from building up a false wealth in worthless dollar savings.

"Everybody knows?" George said.

"I passed it to the truckdrivers as they got their loads yesterday," Einar said.

"Good," George said.

He grinned knowingly at Einar and moved off, hands in pockets, whistling an off key melody.

EINAR GLANCED at the jeep speeding across the ground toward him. A guard was in it. One of the two in on the revolt plot. His attention was forced back to the delicate task of dropping the shovel just right to scoop into the embankment and bring up a full load. When he had swung the loaded shovel around to the waiting truck he took another quick glance. The jeep had stopped. The guard was coming toward him.

He tripped the release that dropped the two yards of mud neatly into the truck.

"Hey! Einar!" the guard shouted above the noise of the motor. "You're

wanted at the warden's office!"

Einar felt a surge of new hope. This would be a chance to let the warden know what was going to happen. But immediately his heart dropped. Why would the warden be sending for him? There was but one reason. Harry's body had been found. They were bringing him in to question him. Or were they going to charge him with the murder? That would be a touch typical of George Lord. More than once Einar had felt that George knew he was a GHQ operative, and that that was the source of the amusement that lay deep in his eyes when he looked at him.

"Right," he answered.

He swung his shovel around and brought it to rest ready for the next scoop and shut off the motor. The palms of his hands were moist.

He jumped down out of the cab and got into the jeep beside the guard.

"What's it about?" he asked carelessly. "Harry's murder?"

"I don't know," the guard said, starting the jeep with a violent lurch. "Damn this clutch. Sticks. All I know is they handed me orders to bring you to the administration office. Whatever it is you don't have to worry. Even if they locked you up for murder they wouldn't shoot you today—and tomorrow you'd be out again after it's over. So don't worry."

"Yeah, guess you're right," Einar said, slumping down.

The guard stopped the jeep at the administration building.

"I'll go in with you," he said. "That way I can maybe find out—in case you don't get to come out again."

Einar glanced around curiously as they entered the building. They were in a reception room. The floor was of asphalt tile, a bright mottled yellow. Two men in the garb of pris-

oners were at work at the two desks in the room.

"Sit down and wait, Mr. Tharnsen," one of them said, looking up. He turned his eyes to the guard. "That will be all, Mr. Overman."

The guard hesitated, looked at Einar in indecision, then turned and left. The trusty was dialing on the phone. As the door closed behind the guard the trusty said, "Right through that door, Mr. Tharnsen."

Einar went to the door and opened it. He saw the warden sitting behind his desk and a soldier. An officer, tall and lanky. Both men were smiling broadly at him.

"Einar!" The familiar voice exploded in his ear. He turned in the direction of the voice. Familiar features, the large braid of straw colored hair curved into a nest.

"Hilda!" he said, a mixture of gladness and alarm in his voice.

His wife was reaching toward him with her arms, wanting to rush to him, afraid to display affection in public. He knew what went on inside her.

"You're free, Einar!" she was saying. "Mr. Swank here helped me get you free. We have a special pardon from the President of the United States himself!"

She was standing there, so erect, so proud, so happy. A pain shot through Einar's heart.

For an instant he felt regret that he had ever been born. This was a moment when decisions had to be made and acted upon. He didn't feel capable of making them. Should he warn the warden now? Hilda was no actress. They wouldn't get away alive. Should he say nothing and let them take him away, and after they were safely away start things moving?

"You're free to leave at once," the warden said. He was smiling—and Einar couldn't condemn him to his death in the revolt tomorrow.

"Okay," Einar said, suddenly making up his mind. "But—could I leave a note for one of my friends?"

"Of course, Einar," the warden said. "I'll see that it's delivered to him." He opened a drawer and took out paper and pencil and held them out.

Einar smiled at his wife. While they watched him he sat down and hastily wrote out the details of the plan for revolt, giving names. He folded the paper and wrote on the outside, *For you, warden.*

Standing up, he handed the folded note to the warden. The warden took it and glanced at the supposed name on the outside in idle curiosity. He frowned suddenly and looked sharply at Einar.

Einar shook his head imperceptibly, holding his breath, hoping the warden was shrewd enough not to do the wrong thing.

The warden looked confused. Then his face cleared. He smiled. "I'll see that *he* reads it, Einar," he said. "However—" He looked at him quizzically. "I didn't know you considered him a friend of yours."

"Let's go," Marvin Swank said.

Einar nodded and put his arm around Hilda and started toward the door. His palms were moist again. So much depending on so little. Perhaps the entire outcome of World War III concentrated on what happened in the next ten minutes. The warden would have to fight for his life, rallying the loyal guards and keeping possession of the arsenal. But that was a side issue.

But—perhaps—the fate of the civilized world depended on whether he, Einar, could reach the gates of the labor camp without being shot....

"**M**ORNING, Mark," Major Steve Davis said. "Sit down and join us."

Major Mark Andrews smiled at him and Major Milt Altman and sat down. "Just coffee, please," he said to the waitress.

Milt Altman lifted his arm and frowned at his wristwatch. "Just fifty-seven minutes more," he said. "Major Loomis will be boarding his ship in another twelve minutes."

"I wish I'd had what it takes," Mark said regretfully.

"Don't we all," Steve murmured. "By the way, what's come over Major Loomis? All day yesterday he had the strangest expression on his face."

"I noticed it too," Mark said.

"So did I," Milt said. "It reminded me of the smile on a nut I saw in Los Angeles once. A guy who claimed he was God. Major Loomis had that same look—a sort of quiet smile and—"

"It wasn't quite like that," Mark interrupted. "I saw a man who looked exactly like Neal did all day yesterday. It was when I was in Africa with the Europe atom bomb detail. He was a fighter pilot and he'd had a dream that it was his day to get it. If he'd told anyone he'd have been sent back home, but he just wrote a note that was found later in his effects."

"I think you're both wrong," Steve said. "Neal knows his stuff. He's the first American to leave Earth. It's a job any one of us would give his eye teeth for. If I had made the grade and it was the day before I was to go up I think I'd have the same smile—"

"It wouldn't be the same," Mark said. He glanced nervously at his watch. "Forty-five minutes. He's riding the elevator up right now and getting into the ship. God, I'm nervous! If something goes wrong and he crashes..."

Five sharp piercing shrieks sounded in rapid succession. There was a

pause, then they were repeated.

"That's clear-the-field," Mark said unnecessarily. "No turning back now. He's in there, alone, in—" He looked at his watch. "—thirty-eight minutes..."

"Hey," Milt said softly. "Look who just came in! Dorothy!" He waved his hand at her and motioned for her to come over and join them. In an undertone he said, "I saw her and Neal leave the party together. Wonder if they have a crush on each other."

"Lucky dog," Mark mumbled. "He'll have all the breaks from now on. What's eating Dorothy? She looks like—" She was too close for him to finish his remark.

"Good morning, Dorothy," Milt said, getting up and pulling back the fourth chair for her. "You're looking pretty upset. We're all nervous, but—he'll come back."

"Good morning," Dorothy said. She sat down and placed her elbows on the table, twisting a small lace kerchief in a distracted way.

"Some coffee?" Milt suggested.

"What?" She looked up at him as though she had forgotten he was there. "No. No, thanks."

She bit her lip and looked out the window at the incredibly tall, incredibly graceful projectile a mile away pointing upward at the sky as though anxious already to be free of its Earth bonds.

"Twenty-four minutes," Mark announced—and suddenly they all realized they had been staring at the spaceship.

"Oh, dear God," Dorothy exploded suddenly. "They can't let him go up. They can't. They've got to stop him." Her lip trembled. She sucked it between her teeth, then brought the twisted remains of the kerchief to her eyes.

"Here, now," Milt soothed. "It

isn't that bad. The Ruskies have reached the moon. The ship is as perfect as man can make it."

"Oh, I know. I know," Dorothy said. "But he shouldn't go up. He's in no shape for it. He might do something."

"You're just imagining things," Milt said.

"What do you mean?" Mark asked, looking at her sharply.

"Why—why nothing!" Dorothy said.

"Yes, you do," Mark said, gripping her wrist. "Come on! Out with it!"

"You're hurting me," Dorothy said, trying desperately to smile. Mark stared into her eyes and slowly relaxed his grip.

"One minute!" Steve said tensely.

They turned to the window, everything else forgotten, their eyes on the ship, waiting for the first blast of flame....

"HOW DO you feel, Neal?" It was General Walters' voice coming from the gray grill of the radio.

"All right, sir," Neal said calmly.

He was sitting in a chair with a form fitting back of sponge rubber that cradled him against the terrific acceleration that would grip him shortly. In front of him within easy reach were all the controls. Above them was a concave dome that seemed to be transparent, bringing a clear view of the rocket field and the buildings a mile away.

He reached out and pushed in the second of four pushbuttons in a small rectangle of the control panel. Instantly the view of the field and the buildings was replaced by one of drifting clouds and a star studded sky. He knew what he was seeing was exactly what he would have seen if the screen were actually a transparent dome. But it was in reality a

video screen connected with electronic camera eyes fixed into the outer shell of the ship.

"I have a last minute surprise for you, Neal," the General's voice sounded. "Special line to Appomattox. The President wants to wish you luck personally."

"Put him on," Neal said. And the second hand passed the bottom, moving toward the beginning of its last round.

"Good morning, Major Loomis," the President's voice erupted from the speaker.

"Good morning, sir," Neal said.

"I want to wish you God speed, Neal," the President said, his voice suddenly personal in tone. "When you get back—the highest honors this Government can give will be yours..."

His voice was drowned out by the wail of the air raid siren. At first Neal thought it must have originated at the Capitol at Appomattox. Then he realized General Walters' mike must still be on.

The sky as seen in the video dome was suddenly alive with fighter planes. Soviet jets. Target-seeking rockets sliced upwards, leaving trails of still fiery gas.

Neal glanced at the instrument panel clock. Four seconds to zero. His eyes went back to the screen.

A new type of ship shot into view. A giant thing, less than three thousand feet distant. From the side a streak of flame appeared, at its head a flash of pointed silver that drove straight into the heart of the ship. In the next instant its side opened up, seeming to melt and evaporate, rather than explode. Men and machines were pouring from the wound. The atomic fire trail of the missile seemed some lethal ray, rather than matter, in that instant.

Then the scene of destruction was

brushed aside by an unseen hand, and incredible weight was pressing Neal back. His eyes jerked to the clock. Zero hour had passed. The ship was lifting...

There was a curtain of intense black hanging deep within the concave video dome of the compartment. A very old and somewhat dusty curtain with countless holes through which light seeped. It was the universe.

Neal kept his eyes on it as he reached for the controls. The stick was exactly the same as the ones in the planes he had used.

He pushed forward against it, feeling it resist. In his mind's eye he could visualize the gear motors slowly whirring in the gyro compartment, the long ship slowly changing direction, while the tail of atomic fire continued to shoot straight back without abatement.

Something rose into view—or was it the black curtain being lifted? It was the Earth, the curved horizon.

Neal leaned forward to look down. He had seen this before in pictures taken from experimental rockets. But it hadn't been quite the same. Those pictures had shown a recognizable North America. It was the North American continent below, but no longer recognizable. It looked more like a huge discolored tooth with two roots extending down from a corroded and blackened shell, one blunt, the other long and jagged.

The Pacific stretched out ahead like the greasy surface of a steel ball. To the north the pulled tooth was joined insecurely to another mass of black. Siberia.

There were little flecks of bright silver down there. They seemed stationary, but they were above the scattered clouds. Planes. While he watched, their illusion of motionlessness vanished. His mind made the ad-

justment to distance and size. There were thousands of them.

"General Walters!" he said. "There's a mass raid starting from Alaska. Thousands of planes." He waited a moment. There was no answer. "General Walters!" he said.

Frantically he twisted the dial of the receiver. Suddenly a station came in loud and clear.

"your li'l ol' disk jockey, Tubby O'Hara, broadcasting from KQTZ, the Kaintucky station that moved to the hills of Tennessee when the li'l ol' Gulf of Mexico welcomed the aintire Southland to its bosom. We'll have the news in a few minutes now, but I think we have time for a tune first—"

Angrily Neal twisted the dial off station. He looked down at the flecks of silver. They were piling up along a line in the Yukon. Here and there they were changing from silver to lengthening trails of dark etched into the white background of clouds.

In his mind Neal was translating the flecks of silver into planes and battle formations and movements. There were troop transports. Too many to count. Some of them had broken beyond the line of Western defense in the north with their fighters fluttering around them. More were coming from Siberia.

This was an all-out. The thing the airforce had fondly hoped for was no longer possible.

Neal searched the ground to the south. There were flecks of silver there. He translated them into planes going at definite speeds and covering distances. They would get there in time to stop some of the Soviet airfleet. But—

"The last hope for us," he groaned.

He twisted to watch the drama of death and lost hope as the turning globe drew it over the brink of the

eastern horizon.

THREE HUNDRED miles below, the looming rim of what the hungry Pacific had left of China crept over the horizon, moving toward Neal and taking form. A shoreline and sloping hills.

He watched it pass below with the ponderous dignity of vast things moving slowly. Then, abruptly, he turned away from it.

He pulled back on the stick. The earth dropped in the video dome as the gyros shifted the nose of the ship upward.

The dusty black shroud of space with its scattered scintillating jewels was an abyss into which he was plunging.

He touched the plutonium feed control and smiled his satisfaction as he felt added acceleration press against him.

After a while he pressed each of the four pushbuttons that selected the direction of view in the video dome and saw in turn the sun with its flaming corona, the earth which was now a colossal globe with alien geography, and the moon, travelling in its unchangeable path to the point of rendezvous, and once again the black canopy of diamond dust whose pattern was his signpost in space.

And finally the time came to touch the gyro stick once more. There was no slightest change in the force of acceleration flowing through him, yet the universe passed across the video dome in swift departure until the earth, a globe twice the size of the moon as seen in earth's skies, hung suspended in the screen, stationary.

But to Neal it was no longer the world he had left, nor quite yet the globe it would be soon. It was an abstract direction of reference in the guidance of the ship.

Now he touched the number four

pushbutton. The earth was replaced by a faint ball of fire which was the residue of the rocket tail not eliminated from the video composite, and by the now familiar section of space toward which he was headed. And, to one side, the moon, now an unreal and magnified globe, seemingly unmoving, yet moving as fast as he toward the meeting place in space.

There was no room in thought for any other thing. Ptolemaeus, a crater ninety miles across, was to be the destination. It was clearly visible. And already in Neal's eyes it had become the landing field, while the spaceship had become a jetcopter that must be dropped on a stationary dime with a feather touch.

Time stood still while all else moved. Gyro motors in high gear for instant response. Plutonium feed dual controls, one normal and one micro. Video eyes alternating magnification for constant checking.

And then—it was done. There was the jarring thud, and the moment while Neal held his breath and the destiny of mankind hung in the balance. And atomic fire rebounded from the moon's surface to blot out all things, and wash away as he cut the plutonium feed.

He jabbed at the number two video button. Instantly the earth appeared. It was stationary in the screen, revolving with almost imperceptible slowness. It would remain there in that same spot until Neal took off again for home.

Now he reached into the right hand

section of the control panel and pressed a button. A moment later a green dot of light appeared inside it—the signal that the pointed nose of the ship had retracted, to be replaced by the launching tube for the atomic missiles that filled the vast hold of the ship, tier on tier.

Neal looked up into the screen at the globe suspended there, and at the discolored tooth with two roots that was North America.

A quiet smile rested on his lips as he turned on the radio.

"Major Loomis reporting," he said quietly. "Objective reached and am centered on target."

Five seconds passed. Then—

"Thank God, Neal!" It was General Walters. "And none too soon. We're almost lost. Russia threw an all-out at us. An old side kick of yours, Marvin Swank, and a GHQ agent, Einar Tharnsen, gave us warning in time to blunt the thrust, but—fire. Fire at will until they give up!"

The quiet smile, holding within it the culmination of the hope of all freedom loving peoples, remained on Neal's lips as he made adjustments.

In his mind's eye was the memory of the rocket in number one place for launching. And in his thoughts as he jabbed the firing pin a voice whispered, "It's about time!"

And in neat white letters on the side of the silver shape that darted Earthward from the nose of the ship was one word.

Moscow.

THE END

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In the July **AMAZING STORIES** — on sale May 11

THE TWO-TIMER

By H. B. Hickey

This machine made it possible for Frankson to possess two women at the same time. But how would it work if he tried to get rid of them?



FRANKSON lay on his favorite relaxer, his body supported by countless gas filled bubbles of rubber, and enjoyed the evening tele-tact. Tonight they were showing a rorchid, a cross between a rose and an orchid.

"You will notice," the demonstrator

was saying, "the perfect union of textures, the muting of colors. Naturally, the scent is that of the rose, although not so cloying, and in hardness also the rorchid follows...."

He'd have to try that in his garden, Frankson thought. Seemed like a perfect choice for the circular bed near



the pool. Although in quantity, of course, they might be more cloying than the fellow claimed.

Too bad they couldn't transmit odors yet. Simple, really, if they but knew. The step from three-dimensional television to teletact had been easy enough; two transmitters instead of one, and not placed too close together.

Take three transmitters, then, and very far apart; one main projector and two reflecting projectors, each at a point of a triangle, and each reflector also a receiver. Have materialization occur outside the receivers, along lines of triangulation.

Simple, really. Not only odors, but the whole complete entity reproduced. Well, Frankson thought, maybe when he was eighty or ninety he might let them in on it.

Meantime, he felt again the texture of the orchid. It was delightful, smooth and soft as silk. Feeling it, Frankson smiled. Like Wahila's skin.

A warning jangled in his brain: Watch that! He swung his gaze toward his wife to see whether he might have spoken unwittingly. Apparently not; Birdie was still curled on the couch, her fingers busy with the knitting needles.

Frankson sighed. First time it had ever happened, of course, but he'd have to watch it anyway. No need for it, really. His was the perfect setup, the thing every other man only dreamed about.

He realized his wife was speaking: "—and I said to Grace, really, I said, where in the world children pick up the things they do—"

Ad infinitum, Frankson thought dreamily. Wonderful woman, Birdie. Wonderful wife, wonderful mother. Her home, her children, her husband; those were the stuff of which her circumscribed world was made.

What every man wanted. Or, what half of every man wanted. The bustle

of the mornings, the quiet of the evenings, the endless concern with trivialities; they were all part of what a man wanted of life and woman.

"—and the way she boasts of that child, you'd think—Glenn! You're not listening!"

"Of course I am."

"Of course you're not." She laughed without bitterness and swung her matronly figure off the couch. Her unrouged lips brushed Frankson's forehead. "You spend all day working and then you have to come home to my chatter. Don't blame you for not listening."

"You're a wonder," Frankson chuckled. He patted her fondly and his mind almost slipped again and he thought once more: Watch it!

SHE HADN'T noticed, of course. Wonderful woman, Frankson thought again. A chair that had been moved a thousandth of an inch, a picture micrometrically askew, one molecule too many of sodium chloride in a platter of soup—those she detected infallibly. But the fleeting gleam in a man's eye, never.

There was a moment of tranquility while they stood together watching the night sky through the curve of the window. They saw a streak of scarlet flame arc upward, like a burning arrow.

"The Mars rocket," Birdie said.

"Eight o'clock, synchro time, and all's well," Frankson intoned. They said the same thing every time they saw it.

"It would be awfully nice for the children if they could make the trip some time," Birdie said. "So educational."

"Do them good," he agreed.

They always went through that, too. Well, it would be a mighty long time before the children saw Mars if they waited for him to take them.

It was another thought that didn't show on Frankson's face. They remained as they were, his hand resting on Birdie's shoulder. Eight o'clock. She had been knitting for more than an hour; he had been absorbed in the teletact for an equal length of time.

Birdie looked up at him. "How about asking the Calders in for a couple of rubbers?"

Why always the Calders? Last time, Calder had come up with that crack about seeing him on Mars. For an instant he'd been jarred, coming out of a clear sky the way it had.

Then, poise returning, he'd said, "Mars? When was that?"

"Last week. Wednesday night, to be exact. I yelled across at you, but the club was so crowded—"

Frankson had played it cute. "Wednesday? Let's see now, where was I last Wednesday night?"

"Playing cards with Birdie and me," Grace Calder had reminded him with a laugh.

And Harry had gone sputtering on about what a really remarkable resemblance there'd been. Frankson hadn't a twin brother he'd never mentioned, had he? Really, the resemblance had been positively uncanny.

REMEMBERING, Frankson smiled to himself. The obvious answer, that it had been he Calder had seen, and at the same time had been he playing cards on Earth, would never occur to anyone.

Still, he'd had that uncomfortable moment. "No, I don't think so. Not in the mood for the Calders tonight."

"All right, dear," Birdie said with calm acceptance. "Wasn't it funny, dear, how he insisted about that man? And you only forty million, or whatever it is, miles away." She laughed.

"Harry is a persistent bore," Frankson grumbled.

"And you're a bear," Birdie said

affectionately. She cocked her head at him. "Really, though, Glenn, you have been moody lately. Ever since you brought that box home—"

Frankson swung on her savagely. "You haven't touched it, have you? I told you never to touch that box!"

That was the danger, the only danger. He'd told her the box contained delicate instruments, plausible possessions for a consulting engineer. But if she ever discovered the truth—God! What a mess! Philandering, in this balanced society, was as bad as murder.

"Of course I didn't touch it," Birdie was saying. She pouted. "You are a bear lately."

He was contrite. "I'm sorry, honey. Forget it, huh? Give us a smile, baby,"

She smiled up at him and he smiled back.

FRANKSON ran the shaver over his face for the second time, then felt his chin. Smooth as a baby's. Nothing like this Martian climate for a man's complexion. Looking out the bathroom window, he saw the twin moons rising over the plass domes of the city.

Another hour and the night clubs would be jammed, the dance floors packed with swaying couples. Whiskey would flow like water and be no more costly. Nothing like an expanding frontier, Frankson thought.

"Oh, for the libertine life," he hummed gaily.

He took a last look in the mirror and saw that Wahila was watching him. She was still sprawled lazily on the couch, not a stitch of clothing on her. Like a big kitten, Frankson thought; soft and cuddly and completely uninhibited and amoral.

Even on Mars her skin was incredible, so fine and softly glowing. To touch her was to be thrilled. And her every movement was perfection itself, seductiveness in the flow of her long

limbs, in the swish of her copper tresses, even in the sweep of copper lashes above eyes like jade.

Lilith, Frankson thought. Eternal temptress. A man's eyes, hot upon hers; a man's lips in a crushing kiss; a jewelled bauble, a daring gown, soft furs; these were the things that made up her circumscribed life.

The perfect wanton. What every man desired. Or what half of every man desired.

She moved, curling herself now in the corner of the couch. Almost Frankson thought, like Birdie.

A warning jangled: Watch it! Not that he had to worry, of course, but it was better to play safe. Women like Wahila had uncanny intuition about men. But it seemed that this time her intuition had failed her.

Perfect setup, of course. Every man's dream come true for him, having a dish like Wahila. And this secluded apartment.

He realized Wahila was speaking: "—and I said could be, dearie, but at least mine don't come from a store—"

Ad infinitum, Frankson thought dreamily. Always the competition, the things of the flesh. But otherwise, how could she be what she was to a man?

"—and now he's given her her own 'copter and a pilot and—Frank! you're not listening!"

"Of course I am."

HE DROPPED down beside her on the couch and took her in his arms. "Besides, which would you rather have, me or that fat slob and a 'copter?"

She purred and twisted in his grasp and nipped playfully at his ear. "Lover man," she murmured. "You know the answer to that one."

They were still for a moment, watching the brilliance of the stars in the inky sky of Mars. A flash of scarlet fire arced upward. The Earth

rocket. Eight o'clock, synchro time. Midway it would pass the Mars rocket, which had just taken off.

"When are you going to take me on that trip you promised?" Wahila asked.

"Soon as I get some time off."

He tried to get up, but she held him. "I don't like that job of yours, whatever it is."

"It makes the money that buys the things that make my baby happy," Frankson laughed.

He was afraid the laugh hadn't sounded genuine enough. Wahila's eyes had turned almost emerald.

"If you're two-timing me..." she murmured. "You haven't been thinking about another woman, have you, Frankie?"

"See your mirror for the answer to that one."

This time, his laughter was real enough. She joined him, sure of her hold again. Frankson took her hands and pulled her to her feet.

"Come on, baby. Get some clothes on. We've got a lot of drinking and dancing to do tonight."

She dressed languorously. Frankson watched her, feeling a growing irritation. Those sheer stockings were too fragile and expensive to yank like that. And the perfume she applied so liberally had cost him a pretty penny.

At last she was in a skin-tight gown and waiting for him to zipper her. "Let's go to the Illuria, Frank."

Always the Illuria! Last time there'd been that fool, Harry Calder. Of course Calder hadn't actually caught up with him, and it mightn't have mattered if he had. But it had been an acutely uncomfortable moment.

Good thing the place had been so crowded. Afterwards, he'd told Wahila he hadn't heard a thing.

"I was sure I heard him holler

your name," she'd said. "Frank Frankson, I'm almost sure he yelled."

He'd played it cute. "Or maybe it was Glenn Frankson?"

Wahila had giggled. "Could be. Champagne always makes everything topsy-turvy for me."

It might not happen again, Frankson thought. But even so, the Illuria was the favorite spot for visiting firemen from Earth. Why take even a million to one chance?

"Some other place tonight," he said.

Wahila shrugged. "All right. Wasn't it funny, last Wednesday night, the way that man kept yelling at you?"

"Everybody always yells at the Illuria," Frankson said irritably. "Noisiest place on Mars."

Her glance was calculating. "Most expensive, too."

"You know I don't care about that!"

"I know, Frankie. Lover always wants the best for his kitten." She snuggled up close. "I really ought to have a nicer apartment, though. The maids here are awful. This one today spilled my best powder. And then she went in the bedroom—"

"You didn't let her touch that box! I told you never to let anyone touch that box!"

Sweat started on his brow. Good grief, if Wahila ever found out! What a mess. He'd told her there were delicate instruments in that box, and it was true enough. Frankson hated to think what might happen if a clumsy maid started moving it around.

"Of course I didn't let her touch it," Wahila said. She tossed her head. "And don't shout at me, Frank Frankson."

Frankson relaxed. "Didn't mean to, honest. Just nerves. Come on, give us a smile, baby."

She smiled, grudgingly, and Frankson smiled back at her.

AUTOMATIC secretaries certainly had their advantages, Frankson thought. They didn't make mistakes, they didn't chew gum, they didn't get sick or get married, and they didn't distract a man by crossing their legs.

On the other hand, they didn't disregard wrong number calls or throw advertising matter in the wastebasket. And they had unpleasant metallic voices.

He had already disposed of the neatly opened envelopes and their contents. For the rest, he would have to muster his patience. He tilted back in his chair and listened to the monotone recital of all the phone calls that had come in while he was away from his office.

At last the drone ended and Frankson heaved a sigh. Nothing important, thank heaven. He wasn't in the mood for important business this afternoon. Plugging the phone back into the secretary so that he wouldn't have to answer if it rang, Frankson began to pace the office.

All day now he'd had this feeling of tension, of growing irritation. And the worst of it was that he couldn't figure out why. He'd have to try to analyze it.

Not money troubles, certainly; business was good enough. He was highly regarded as a consulting electronics engineer. Had his vanity lain in that direction, he could have let them know what a genius he was, what an amazing mechanism he had in those boxes.

For a moment, Frankson was pleased with himself. But then the irritation returned. He went back to pacing the office.

Everything should be perfect. He had his home in the suburbs, his garden, his wife, his children. And at the same time he had Wahila. Both halves of the male equation should be satisfied, both demands of the male ego fulfilled.

Maybe that was the trouble. He wasn't an ordinary man. Maybe he needed greater fulfillment than other men. Perhaps he needed two wives, two mistresses! Why not? It would be easy enough to build more machines.

But no. That wasn't it either. There was already the feeling of strain, of being spread too thin. There had been the occasional lapses of thought; not serious, of course, but how could he gauge the results of quadruplication?

And anyway, Frankson told himself, that wasn't the problem. He tried to think back, to probe his memory for the beginnings of this growing irritation. There seemed to be a block, though, and he couldn't go back beyond that same morning.

It had leaped at him during breakfast with Birdie, that sudden disgust and anger. And it had come upon him at about the same time with Wahila, just as he was dressing to leave the apartment.

THE KITCHEN was full of the aroma of coffee and waffles and sausages. With the usual paternal hugs, he had seen the children off for school; now he and Birdie would have their breakfasts. Birdie always waited for him.

She was bustling about in her flowered housecoat; although what there was to bustle about Frankson didn't see, since all the kitchen equipment was fully automatic. Nevertheless, she bustled.

And talked; domesticana, as usual. "—and if you'll promise to eat a light lunch, I'll make a roast for dinner and a couple of pies and—"

"Light lunch. All right," Frankson said, his mouth half full of waffle.

Domesticana. "—and I think it's time to do the children's rooms over. They're growing up, after all, and—"

Domesticana. "—and while I'm in

town, I think I'll get some sheets. They're on sale now, and maybe—"

Damn! It surged up inside him and he almost shouted. Coffee sloshed into his cup as he shoved his food away. Angrily, he wiped his mouth and flung the crumpled napkin aside.

"What's the matter, dear? Is there something wrong with the—"

"No." He got up, managing a smile. "It's me. Morning jitters, I guess." He pecked at her downturned lips.

BESIDE him Wahila stirred, her movements voluptuous even in sleep. Frankson rose and began to dress. By the time his coat was buttoned, she had opened both eyes and was propping herself up with the pillows.

A bare arm came up and patted coppery waves of hair into place. Her little finger smoothed her arched brows and her tongue flickered across her lips to make them moist and shiny. Why she went through this every morning, Frankson couldn't see; she'd be asleep again one minute after he left.

Meanwhile she purred; coquetries, as usual. "—and maybe you'll get through early and hurry home to your Wahila and—"

"I'll try, baby," Frankson said as he picked up his hat.

Coquetries. "Just one more kiss, lover."

Coquetries. "Maybe you could call your office." Her arms snaked around his neck. "Stay here with—"

Damn! It cracked within him and he jerked away, almost pulling her out of bed. With angry exactness, he pinched the creases back in his hat.

"Lover! What's the—"

"Nothing." His grin was slightly askew. "Jumpy this morning, I guess." With his dry lips, he brushed at her pout.

FRANKSON stopped his pacing. He had it now. Ridiculously simple, too, once he'd thought of it. A little analysis, that's all any problem took.

The idea of more machines had been all wet. His approach there had been wrong. It wasn't more of what he already had that he needed.

It was less!

Birdie was just too domestic. Her eternal concern with housewifery could drive a man insane. And Wahila was just too much the paramour. A man could take only so much eroticism before he went off the deep end.

So that was it, Frankson thought. His original idea had been sound enough; he'd known what he wanted. The only trouble was that he had found two women who had what he wanted in overwhelming quantities.

Still, he couldn't blame himself either. It was his first marriage, and his first mistress. Next time, Frankson told himself, he would choose more wisely. Next time—

His jaw dropped. There couldn't be a next time!

He couldn't divorce Birdie. Divorce was almost impossible; even with the best of grounds, it took a year to dissolve a marriage. And he had no grounds at all.

And he couldn't just drop Wahila. He knew her too well. If he tried to throw her over, she'd leave no stone unturned to avenge his implicit sneer at her charms. She'd move Mars and Earth to get back at him. And like a fool, he'd mentioned the name of Glenn Frankson!

He was trapped! He, who of all men held the key to complete fulfillment! And trapped by his own genius; that was the most galling thought of all.

Or was he trapped?

Frankson resumed his pacing. Someone else, yes. But not he. Was he an ordinary man, to be thwarted by the

code that bound ordinary men? Surely not!

The glare of concentration vanished from his eyes as he yanked open a desk drawer. A moment later, the answer lay in his palm. A gun; a different kind of gun; its projectiles were supersonic waves that killed but left no trace.

Pocketing the gun, he stepped into his laboratory and walked slowly toward the main projector that each evening produced his living, breathing duplicate on Mars; and each morning, with the twist of a dial, reassembled the electrons of his body and made him one again.

Smiling grimly, Frankson checked his watch. Five-thirty. Birdie would be setting the table. Wahila would be climbing out of her scented bath.

WEAK AS she was, Birdie had imposed a pattern on him. He almost hung his hat in the closet. Except for kitchen noises, there was no sound. The children were upstairs, their doors shut. He smiled, recalling that it was Birdie who'd insisted on soundproofing.

"Dear? Is that you?"

"It's I." It pleased him to be deliberately grammatical.

She came into the dining room, wiping her hands on her apron, her face flushed. "Why dear, you've left your hat on!"

"I know."

"But why?"

"So it'll still be on when I see you lying dead and rush to your side."

"Dea—?" She looked foolish with her mouth open. "Glenn! What in the—Glenn! Don't point that—"

"It won't hurt a bit. Smile, honey." He pulled the trigger. And missed.

Damn! His aim was no good at all. He fired again and a plate shattered. Next one, Frankson promised himself.

She ran like a flustered chicken and

he chased her, wishing she wouldn't scream like that. Even if nobody could hear her, it wasn't decent.

In the living room, he missed her again and watched a pillow quiver on the couch. He cut off her dash for the stairs and she fled to the den. She was trapped now.

She knew it too. Screaming, she flung herself about, behind a chair, behind the desk. He missed both times. She tried to get behind the big box in the corner, but there was no room.

Reflex action crooked Frankson's finger. The box jerked.

FORTUNATELY, Wahila had picked a tower apartment. There was only the one suite on that floor. Frankson stepped out of the automatic elevator and fitted his key in the door.

It was like stepping into a hothouse filled with a thousand exotic blooms. He shot a glance at the bathroom. The door was open; she wasn't there.

Her voice came from the bedroom. "Frank?"

"Who else?" He crossed to the bedroom. She was sitting at her dressing table, watching him in the mirror.

"Well lover, take off your hat."

"It won't be necessary."

She flashed around. "What th—" Then she saw his hand dip toward his pocket and her smile returned. "Frank, lover, you've brought your baby a—Frank!"

"It won't hurt, baby. Smile."

He shouldn't have spoken. It had given her a chance to react. She was a tigress. A hundred dollars worth of perfume in two hundred dollars worth of crystal flew at his head.

He dodged, fired, missed. Good thing he had the door blocked. She'd think nothing of running through the building stark naked. Again he missed.

A box of dusting powder exploded

in his face and he fired again and again, blindly. Teeth slashed into his wrist and claws raked at his eyes. With his free hand, he clutched her hair.

They tumbled across the bed and onto the floor and her strength was almost the equal of his. The dressing table rocked as they caromed off it. For a moment he thought he was free, and then she was at him again. They rolled toward the corner.

Frankson's shoulder hit the box. The box hit the wall.

HE AWOKE slowly from an endless dream of dark figures rushing through blackness, from a hollow night interspersed with occasional flashes of daylight. In his nostrils was a familiar scent; over him stood a figure in an almost transparent white nylon uniform.

"Wahila!" And then, as the wallpaper, the furnishings, even the pictures grew clearer: "But it's my room! My own bedroom!"

"Of course, lover. When you vanished right under my nose, I had to find you, didn't I?"

Wahila, and in his own home! Lord, what a mess! Frankson tried to sit up, and could not. His hands were free, his legs were free; he could feel that much. But strain as he would, he could not raise his body a single inch.

"I—" He gasped, the terror of impotence shaking him. "What's the matter with me?"

Delicately, she smoothed her eyebrows with the moistened tip of her little finger. "Paralysis of the motor nerves, caused by a nervous breakdown. That's what the doctor says. Such a sweet doctor, too. I got the job through him."

"How...how long—"

"Oh, months. Every time you woke up, he'd put you to sleep again. Thought it might cure you. Too bad."

"Listen," Frankson said, "you've got to get out of here! I'll give you money, all the money you want."

Soft fingers pulled the flimsy uniform tight over her breasts. "Why Frank, lover, you couldn't sign a check even if you wanted to."

"Then I'll have you fired!" He was beyond terror now.

"Oh, the doctor wouldn't let you do that. He and I are very good friends. We even spend our evenings together. Shall I tell you about it?"

WITH GESTURES, she told him.

Detail by intimate detail, her body undulating as she spoke, she told him. And Frankson, the mingled sweat of desire and hatred drenching him, knew that this was to go on day after day; this was to be her revenge.

Suddenly she stopped. The door had opened and Birdie was there. "Glenn! You're awake, Glenn!"

"I'll leave you alone together," Wahila said sweetly. "For a while."

Then Birdie's dry lips were on his forehead, her voice babbling close to his ear: "Oh, Glenn, it was awful, you doing those crazy things and then fainting away like that, and..."

He had to keep his head, Frankson told himself. He could work it out somehow, save himself. But he had to stay calm.

"Listen," he said. "That box. That box I had—"

"No." She put her fingers over his lips. "No shop talk. That's what did it, the doctor says. Overwork. We must not talk about work."

She sat on the edge of his bed, her fingers busy smoothing the cover while she droned on: "You'll see, dear, it won't be so bad. I know it's hard, being helpless, but we'll make the best of it. You'll have me, and the children."

She paused, her eyes brightening. "The children. You'd be amazed how this has matured them. Why, just the other day..."

Her voice went on and on and on. The children, the Calders, cooking, shopping; the ordinary little things that made up her life, that would be his life too.

Listening, Frankson lay there. And the tears welled up in his eyes and slowly coursed down his cheeks.

THE END

THE ELECTRIC FINGERS•

By LEE PURCELL

ONE MORE step along the path to the future has been taken by the technicians. This one refers to an advance in automatic machinery—it's tempting to use the word "robot"—which enables a little bit of plastic, paper or metal tape to direct the operation of a machine.

Sometime back we spoke of the "piano-roll" lathe which was an ingenious automatic lathe which would turn out work entirely controlled by a piece of paper with holes punched in it, much like the player-pianos of forty years ago turned out tinkling music at the direction of a punched strip of paper. This piano-roll lathe has had its function extended by now being developed into a robot whose brain is a thin strip of paper or plastic exactly like that used in wire-records. Only instead of having speech or music impressed on it, it has what in effect, amounts to instructions to "cut

five-ten thousandths deeper...shift one-quarter of an inch...withdraw three-thousandths..."—and so on.

The result is that a master strip of tape can be made, and its electrical output fed to a battery of machines—lathes or what have you—and those machines will go along automatically spewing forth their products!

It is interesting to note that the present state of National emergency will tend to stimulate the development along these lines because of the shortage of manpower. Repetitive operations are going out of men's lives. Now the machine not only takes the place of muscles—it also substitutes for limited brain-power. Perhaps the word "limited" should not have been used. After all there are huge calculating machines capable, in some respects, of outperforming the human mind!

★ ★ ★

"WE'LL GET YOU YET!"

By P. F. Costello



**A weird force lay behind the death of a
newspaperman and the disappearance of a girl.
Could a penny scale furnish the answer?**

WHEN IT was all over—the first phase at least—Malcolm came over to my desk and asked me to write a chronological report of everything that had happened.

"It seems a waste of time," I said.

"You won't print it, of course."

"No, I couldn't," he said. "The readers would want us both locked away in an asylum. But this thing will happen again, Jerry. Maybe tomorrow, maybe next week. And I want a file on what you know about



From the way she stared at the card, you'd think the scale was about to strangle her!

it. Just for the record."

"Okay," I said, and slipped a sheet of copy paper into my typewriter. Malcolm nodded and walked back to his office.

So here it is. Just for the record.

I came out of the *Express* building one raw morning about a week ago and there, getting out of a cab at the curb, was Simon Knowles. With him was a pretty dark haired girl. I walked toward Knowles with a puzzled smile on my face.

There were three things wrong with seeing Knowles outside the *Express* building. First, he lived in San Francisco and the *Express* is in Chicago. Second, he's the kind of person you couldn't budge off his farm with anything short of a global war. That's what it had taken to get him to Okinawa, which is where we'd first met. Thirdly, Knowles wasn't the type to be traipsing about with lovely brunettes. He had a wife and he loved her, and that was that.

So I walked toward him, feeling puzzled and slightly awkward. Perhaps he'd rather I'd minded my own business; but he'd saved my life once and I felt that gave me certain privileges.

"Simple Simon," I called out, and slapped him on the shoulder.

He turned to me and his face was blank and expressionless. Knowles was a big man, with features that were normally alert and inquiring; but now he gazed at me with the dead eyes of a zombie.

The girl tugged at his elbow and he turned from me without a word and walked away with her down the sidewalk. I caught up with them in a couple of swift strides.

"Knowles, it's me—Jerry Ward," I said. "What the devil are you doing here in Chicago?"

Suddenly the girl released his arm and ran swiftly toward an empty cab

that was parked a dozen or so feet away. She opened the door and climbed in with a flash of silken legs. I saw her face as she peered out the rear window at us, and on it was a curious expression; one of wary caution. It was the expression, or rather the feeling, that you would sense in an animal moving carefully through dangerous country.

Then the cab pulled away and disappeared in the traffic.

Knowles staggered against me, and I caught him before he collapsed on the sidewalk. A policeman came running towards us as I stretched Knowles on the ground. Pedestrians began milling uselessly about us in a swiftly growing circle.

"Get these people back," I said to the cop. "This man's had a heart attack."

I had no way of knowing if that were true, of course. I felt completely confused and helpless. None of this was making a damn bit of sense.

I put my topcoat under Knowles' head, and as I did he opened his eyes. He recognized me then, I'm sure. He said: "No heart attack—" And then he twisted against me and went limp. I knew he was dead.

Something floated away from him then, *something* white and vaporous, that left his body and disappeared into the thin cold air. Maybe it was my imagination; maybe it was an optical illusion. I am only describing what seemed to happen.

SOMEONE HAD phoned the police, and the ambulance drew up to the curb as I got to my feet. The police took over very efficiently, and I got out of the crowd and ducked into the drug store in the lobby of the *Express* building. I phoned Malcolm, the managing editor of the paper.

First I told him about Knowles. Then I said: "Would you put some-

one else on that maritime story I'm doing? This thing has some funny angles to it that I want to check."

He said all right.

"Fine," I said. "Would you tell the City desk to check on Knowles' trail? Find out where he was staying, when he got to town, and so forth. I'll chase down this other angle, and call in when I have something."

Again Malcolm said all right.

I had the number of the cab, of course. That had been a mechanical reaction, a reflex peculiar to a man trained on newspapers. I called the cab company's tracing department, and then the police, and got friends of mine at both places to get after cab 1897.

It took them forty minutes to locate the driver, and from him they got this report: The girl had asked him to drive north for about ten minutes. Then she had told him to take her to the Algeria Theatre on Fullerton street. She had paid him off and gone inside.

That was a break of sorts, I realized, as I went out to the street and caught a cab. She had made the first show of the day at the theatre, and at this time there wouldn't be a crowd. I'd have a far better chance of locating her in a practically empty theatre, I knew.

Driving to the Algeria, I went back over the brief scene with Knowles. Possibly I was going off on a very wild goose chase. Knowles might have been taking an extra-curricular marital vacation at that. When I'd known him—six years ago—no one could have made him unfaithful to his wife, Coreen. But that was six years ago. Possibly he'd changed. I didn't know what to think about the white, vaporous *something* I'd seen swirling away from his body. That could have been cold air, or my imagination. The only sensible thing seemed to be to chase

down the girl. And that was what I was doing. So I settled back and relaxed.

I WENT into the Algeria—I forget what was playing—and walked up and down the aisles, trying to make out the faces of the few persons who were watching the screen. I saw several women, but not the one I wanted. No one paid any attention to me. I stood in a dark aisle on the left side of the theatre figuring out what to do next. Maybe the cab driver had given us a bum steer purposefully; or maybe the girl had ducked out of here after the cab had driven away. Then I thought of something else; the lounge.

I returned to the lobby and went down wide curving marble stairs to a plushly decorated room. Doors on either side led to the men's and women's lounges. I didn't care about the men's room; and there was no way for me to find about the women's room. But one thing caught my attention. A cigarette was burning in a sand-filled vase, and there was lipstick on it. That meant someone had just come down here—or had just left. So I decided my best bet was to stick around a while. Sinking into a deep red leather chair, I lit a cigarette and pulled the morning paper from my top-coat pocket.

As I did the door of the women's room opened and the brunette walked out. It was the girl all right, the one I'd seen with Knowles. I thanked God for the paper then and got my face behind it quickly.

But she didn't even glance at me. She walked swiftly, purposefully, to a scale in the corner and stepped onto its corrugated platform. This struck me as mildly odd; she couldn't be worrying about her weight, of course. She was perfect in that department. The scale was the type that dispenses your weight and fortune on a printed

card for a penny. It was a very handsome scale. Full of chromium and nickel, it gleamed like a huge oddly-formed jewel in the softly lighted lounge.

The girl was standing with her right profile toward me, so I took the opportunity to fix her description in my mind. She was about five-feet-four or five and weighed about a hundred and ten or twelve pounds. Her hair was so dark as to seem almost blue-black, and her eyelids were curved and fine. I couldn't see her eyes, but they were probably blue, very blue. Her skin was pale and flawless. She wore a sheared beaver coat over a blue wool dress, and there was a slim choker of pearls about her throat. All very elegant. Her legs were exquisite, slim and gracefully curved, and the nylons and light-weight ankle-strap sandals were utilitarian instead of decorative as is the case with most women.

She was studying the card that the scale had spit into the curved metal receptacle. And she didn't like what she saw. Her hand went to her throat, and her eyes swept past me, unseeing; and again I saw that look of terror and caution in her face.

Turning with a speed that caught me napping, she ran from the lounge and hurried up the steps. I went after her as fast as I could but she was outside and half a block away when I came out of the theatre. She was climbing into another cab then, and there was no hope of my catching her. I stopped, scratched my head, and got the number of the cab in my mind. This was getting into a routine, I thought. What the hell was it all about? I was beginning to mistrust my hunch. I couldn't see how the girl tied in with Knowles, of course, and that was intriguing to speculate about. But, as for the rest of it, she just seemed scared and goofy. Too many women are scared and goofy to make it news.

But one other thing was bothering me; the scale. The girl had got a shock of some sort from the fortune she'd received from it. I went back into the theatre—paying another fare—and returned to the lounge. I wanted to check that scale.

And that's when I realized I was up to my neck in something weird and incredible.

Because the scale was gone.

THAT'S right. Gone. The corner in which it had stood was empty. So were all the other corners. The chairs were still in place and so was the rug, the ashtrays, the pictures, the walls, the ceiling, and the floor. Everything was the same, except that the shining, glistening scale had disappeared.

I wasted a moment or so wondering if I were losing my mind. Then I hurried back upstairs and asked an usher for the manager. He wasn't in; too early. But the assistant manager, an intelligent looking young man in a neat blue suit, was around. He listened to my story with a polite show of interest.

"We've never had a scale in that lounge," he said, when I finished. "We've never had one in the theatre, as a matter of fact." He studied me rather cautiously. "You're sure about what you saw, eh?"

"Well, I might have imagined it, but I don't think so," I said. "Look here." I showed him my press card, a driver's license, cards for various clubs around town. "I'm on a story, and that scale is part of it. Would you do me a favor and check the women's room for me? The damn thing *was* in the lounge. Maybe someone moved it into the women's room."

He took a long slow breath. He was quite upset. He thought I was either a practical joker or a nut. But the press card had made a dent in him.

"Very well," he said. He made a call from his desk to someone and asked that person to send Maggie down to the lounge. Then we went downstairs. The scale was still missing. I showed the assistant manager the corner where it'd been and he stroked his chin thoughtfully. Maggie came down a few minutes later. She was an aproned charwoman in her middle years. She checked the women's room and, with a very suspicious look at me, said there was no scale in there at all.

I checked the men's room and found nothing.

"Well, thanks," I said rather weakly.

"No trouble at all," the assistant manager said.

"Scales!" the charwoman said, and went upstairs stiff in the back.

So that was that. I left the theatre and walked a block or two trying to plan a course of action. I wasn't crazy. I knew that. Don't ask me how. But I knew it. So that meant something really crazy was going on. I thought of checking on the girl again, but decided to go back to the paper and find out what they had dug up on Knowles. But first I called the cab company and the police and got them after the cabbie who had picked up the girl.

Then I went back to the paper, confused and worried.

THE SIGHT of the crowded busy City room was reassuring. Here men were banging out stories, chasing down facts, checking names and addresses in a world of order and routine. It was a welcome sight after my brush with unreality.

Malcolm's office was a glass enclosed fishbowl in the center of the room, and I saw that he was alone, seated at his desk, a big solid-looking man with graying hair and an earthy practical air about him. He looked good to me, too. I went in and took a

seat beside his desk and lit a cigarette.

"Well?" he said.

"First, what about Knowles?"

"There's not much on him yet." He glanced at a typed note on his desk. "There was no identification on him of any kind. No labels in his clothes, no laundry marks on his linen. The police don't know where he stayed, when he got to town, or how. One thing interests them though: he was carrying a loaded thirty-eight. You knew the guy, eh?"

"Yes, in the army. A thirty-eight, eh?" That added to my anxiety. Knowles hated guns. He could use them all right, and where we were he had to, but he never liked them. "Look, I'm going to tell you what happened to me, but first let me say this: I haven't had a drink in two months. Okay?"

"Okay, let's have it," Malcolm said, looking interested.

I told him the whole story, missing nothing. When I got through he let out his breath slowly. "Maybe you'd better go get a drink," he said. "You can't stand sobriety."

"That was my thought exactly," I said. "So we drop it right here, eh?" Malcolm frowned and rubbed his chin. "Like hell," he said. "We'll look into this thing a little bit more."

I knew that's what he'd say. Malcolm has the rare gift of the good reporter; he can't stand a mystery. He always reads the last page of whodunits first.

"You get after the girl," he said. His voice was crisper now, and everything in him was responding to the elusive trail of the story. "That cab she got at the theatre had to drop her somewhere. Well, find out where and get a line on her. Hell, you know what to do. Now what about Knowles' wife?"

"What about her?"

"Who calls her? You or me?"

I swallowed hard on that one. It was the thing to do, of course; but Malcolm's ruthlessness almost shocked me a little. It was as instinctive with him as his breathing.

"I can't," I said. "I knew him in the army and I met her when I got out. She doesn't know what happened yet, and I'll be damned if I'll be the one—"

"Okay, okay," Malcolm said, picking up a phone. "Long Distance," he told the operator. "Where'd he live in San Francisco?"

I told him and waited anxiously while he got his connection. Coreen Knowles, as I remembered her, had been a gay reckless kid and Simon had been her whole life. It was wonderful to see them together. They seemed to be living to the sound of faint but exciting music.

I waited, feeling miserable and irritable, wishing there was some way I could spare her this jolt. Then Malcolm was talking to someone. It was a neighbor, I gathered. And from the one side of the conversation I got, I realized that Coreen was ill, couldn't come to the phone.

Malcolm listened, and nodded to me over the receiver.

"Well, just tell her it was an old friend of Simon's who called," he said. "Jerry Ward from Chicago. No, it wasn't anything important. Just thought I'd like to talk to him. I'm sorry about Mrs. Knowles. Tell her that, please."

He put the phone down, looking excited. "Simon Knowles disappeared from San Francisco ten days ago. The shock had been rough on his wife, and she's ill."

"She lacks our objective approach to life," I said.

"Yeah, it's too bad," he said. "Come on, what are you waiting for? Let's get after that girl. I got a couple of angles I can check on this end. Let's

move."

I WENT outside and called the police for news on the cab driver. They told me he had driven the girl from the Adelphia theatre to a somewhat beat-up neighborhood on the South side, a place where there were plenty of cheap hotels and rooming houses. Well, I thought, if she's holed up in one of those joints, she's making it tough for me. As long as she stayed off the street there'd be very little chance of my finding her. But I knew a few tricks that might flush her into the open.

Downstairs on the street I paused and glanced around, wondering for the first time where Knowles and the girl had been going when I first met them. Not into the *Express* Building, I was sure. Still they must have been going somewhere in the neighborhood, or they wouldn't have left the cab. That was a brilliant deduction all right, I thought. At this rate I should solve all the funny business in about twenty-two thousand years. Stopping at the curb, I glanced at the buildings on either side of the *Express*. They didn't offer much. On the left was an insurance agency, on the right, an office building with a luggage shop on the first floor. There was nothing in the block, for that matter, which suggested by its nature a destination for Simon Knowles. Women's shops, a hotel, businesses of all types. The hotel seemed the likeliest prospect.

This haphazard investigation took roughly about three minutes. In those three minutes I learned something of greater importance than my deductions about Knowles' destination.

I learned that I was being watched.

The watcher was pretty good at it too, and I'd probably never have spotted him if it hadn't been for the extra time I stood there at the curb. If I'd just waited for a cab, I'd never have

seen him, I'm sure. But those three minutes gave me the chance to become aware that one person was standing incongruously motionless near the revolving doors of the *Express Building*.

You know what the entrance of a building is: people come in and out, and occasionally one of the out-going people spots an in-going friend and they get out of the stream and talk a minute, or somebody stops just outside the doors to light a cigarette or turn up his coat collar or take a peek up at the weather. All that is normal and usual; but this fellow wasn't normal.

THIS WATCHER was standing just to the right of the doorway reading a paper and glancing over the rim of it at me every now and then. I saw him when I came out of the building and thought nothing of it. I saw him a few more times as I ran my eyes along the block looking for the place that Knowles and the girl might have been going. And then after seeing him six or seven times, I noticed him. That's what ruined his game. He was in a conspicuous spot, and he couldn't move away without losing me.

I pretended to continue staring up and down the block, and out of the corner of my eye I fixed the watcher in my mind. He was tall, compactly built and well dressed in a blue topcoat and a gray Homburg. I couldn't see anything of his face but a rectangular blur as he peered at me over the edge of his paper.

There was nothing more to be gained by waiting, so I turned to the street and signalled the first empty cab to come along. That put the next move up to my friend, the watcher. I looked out the rear window as we pulled away from the *Express Building* and saw him hurrying to the curb and waving his arm at a cab.

I turned around and said to my driver: "Keep an eye in your rear vision mirror, will you? I want to know if we're being followed."

"Movie stuff, eh?" he said laconically.

Cab drivers have become characters today. It's too bad, but there it is. "No—green stuff," I said, and showed him the edge of a five-dollar bill. "So keep awake."

"Sure thing," he said quickly. He drove on for six or eight blocks and then said: "Yeah, there's a cab on our tail. Want me to lose him?"

"Yes, and fast."

The driver knew his business, all right. He slowed down for a traffic light that was showing yellow and was about to turn red. The other cab stopped completely, and my driver gave it the gun and jumped through the red light just a few feet ahead of the traffic that was starting up in the opposite direction. The cab that was on our tail was left stranded facing a red light and two lanes of traffic.

"I picked up that one in a B movie," my driver said. "You see, a guy was being followed because he knew where a jewel was that had in it some plans for a new kind of battleship. Well, there's a girl, you see, and she—"

"Sounds great," I said. I gave him an address near the neighborhood where the girl had last been reported, and then settled back while he told me the rest of the movie plot.

It was a silly plot, improbable, incredible and full of cliches. Yet, I thought, it wasn't any worse than this business I was mixed up in. That made me frown. Normally, I'm a realist, a hard-headed reporter who knows a fact when he sees one and isn't interested in anything else. But this trail I was on had all the goofy elements of an Edgar Wallace spy thriller, plus a few touches of Jules Verne.

FINALLY we reached the address I'd given him: an intersection of two drab streets on the south side of Chicago. I paid off my driver, gave him the five as a tip and he drove off looking happy enough even though he hadn't finished telling me the story of the movie.

I looked around, wondering where to start. The neighborhood was cold, gray and dismal. Neon signs from bar rooms shone weakly and tiredly through the gathering darkness, and the few pedestrians in sight were hurrying along as if eager to be anywhere but outside in that gray cheerless night. There were junk shops across the street, and the three globes of a pawn broker and a few beat-up hotels and rooming houses.

This was where the girl had been dropped by the driver who had picked her up at the Adelphia theatre. It was going to be plenty tough finding her; and that was putting it mildly. There was nothing to do but start punching doorbells, so I got at it. I started at the hotel, and worked my way down the block. I told a story about having got mixed-up about the place I was supposed to meet my sister and did she stop in here by any chance? I described the girl I wanted and the clothes she had been wearing, and watched for some glimmer of recognition and got none. Suspicious old women, wise young desk clerks, rheumy-eyed old men, stared at me, shook their heads and went back to what they'd been doing before I came along.

A couple of hours later I stood on the sidewalk, discouraged and hopeless. The night had gotten colder, and the wind was going right through me. I had covered fifty or sixty joints in the immediate area without getting a nibble. It looked as if I were working a dead-end street. Then as I was lighting a cigarette a man passed by me, and in the brief flaring illumination

of the match, I saw his face; and something like a cold finger went down my spine.

His face was blank, expressionless; his eyes, cold, staring, unseeing. It was the same mindless mask Simon Knowles had worn when I'd met him in front of the *Express* Building. I didn't know what it meant or whether it was merely coincidence, but I wasted no time speculating about it. I flipped my dead match aside and followed the man down the street.

He walked swiftly, purposefully, glancing neither to the right nor left, but staring straight ahead as if his eyes were fixed on a distant waiting enemy. I kept about fifty paces behind him, deliberately not thinking about anything except the job of keeping on his trail. He turned right at the first intersection, passed a number of hotels and rooming houses I had already checked, and kept straight on for two more blocks, at which point he turned left and entered a dark street. I hadn't been in this block, but I saw ahead of me, about six houses from the corner, a *ROOMS* sign hanging over the sidewalk.

The man I was following turned under this sign and went quickly up a flight of board steps and rang a bell beside the front door. I drifted off the sidewalk into the shadow of a tree and waited there until a gray-haired woman in a red sweater opened the door. She peered out at the man, they exchanged a few words which I couldn't hear very well, and then the man entered the house and the door closed behind him.

ONLY THEN did I let myself think. The first time I had seen the girl she was with Simon Knowles—a dead-eyed Simon Knowles with a blank mask for a face. Now—in this area where I suspected the girl to be hiding—I had come across another

dead-eyed zombie. Maybe I was getting close to an answer to this damn muddle. There was only one way to find out, of course; and that was to keep barging ahead. I left the shadow of the tree and walked briskly toward the *ROOMS* sign.

But I didn't make it. A cab, moving slowly and silently, pulled up beside me, and before it stopped moving, a tall figure in a blue topcoat and Homburg hat hopped out and crossed the sidewalk. I felt strong hard fingers close around my right arm.

"Just a minute, please." The voice was low, pleasant but business-like.

I turned and saw his face—a long, impassive face with bright glinting eyes.

The face meant nothing to me, but from the clothes I recognized the watcher who had tailed me from the *Express* Building.

"What do you want?"

"I'd like to talk to you a minute, if you don't mind."

"Well, I mind all to hell," I said. "You've been following me all afternoon, haven't you?"

"That's right." The long, impassive face was suddenly touched with an apologetic smile. "You got away at an intersection a couple of hours back, however."

"You should pick cab drivers who go to the movies," I said.

"I beg your pardon?"

"Never mind. It was a joke, a small one. You can see me at the City room of the *Express* any time you like. But now I'm busy. So long."

His hand stayed on my arm. "One minute, please. You knew Simon Knowles, didn't you?"

I turned slowly to face him. "Yes, I did. What's your interest in him?"

"That's one of the things I'd like to talk to you about. I realize this must seem queer to you, but you must take me on faith for the moment. I

want you to come with me now, and meet some other people who are interested in Simon Knowles. Believe me, this matter is of the greatest importance."

"My present plans are also of the greatest importance," I said. "I'll talk to you tomorrow, not now."

He sighed, almost sadly, I thought, and then I felt a hard object pushing into my side. Glancing down, I saw that his left hand was buried in the pocket of his blue topcoat and the cloth of the pocket was pushed out to a blunt point.

"Now be reasonable," he said. "Get into the cab, please. I don't want to hurt you, but don't bank too much on my kindly instincts."

"No, I won't," I said. My throat had gone dry when the gun pressed into my side. I'm no hero; I get scared easily. And it's just because of that—being scared—that I took a desperate chance to get away from him. He turned slightly to nod at the cab driver, and as he did, the barrel of the gun moved past me and pointed, for an instant, harmlessly down the street. I was luckily standing in a position from which I could swing without first moving and attracting his attention. The blow hit him across the edge of his jaw and knocked him to his knees, and before he could get straightened out I hit him again, this time across the base of the neck with the edge of my hand. He went down full length in the dirty slush on the sidewalk, his breath coming and going with a moaning sound.

THE CAB driver had seen me hit him the second time, and he climbed out of the cab, looking puzzled and a little frightened.

"Hey, what's going on?" he said.

"Listen, friend, this character is a fourteen-karat screwball. He's been tailing me in your cab since I left the

Express Building, right?"

"Yeah, that's right." The cabby seemed reassured to have a solid indisputable fact in his teeth. "You know him then?"

"I've known him for years," I said. Years of fabricating likely sounding stories, in the course of getting in and out of tight spots while covering stories, was coming to my assistance now. Automatically I began weaving a fast and plausible explanation for the cab driver. "This character is loaded with dough, comes from an old Chicago family, but you know what he wants to be?"

"No, what?"

"A detective," I said. "Can you beat that? He's cracked on that idea. He spends his time trailing his friends around like a private eye."

"No kidding!"

"He's been in a few scrapes about it in the past and his family had him away in a sanitarium for a while. But nothing helps. He's been after me for the past few days and it's going to cost me my job." I showed the driver my press card, told him I was working on a story, and so forth, and then I paid off what was on his meter and told him to take my unconscious shadow out to his home—a fictitious address in Evanston, a suburb of Chicago.

"His family will take good care of you," I said as we loaded the man into the rear of the car.

"Thinks he's a detective, eh? Well, I never thought there were so many bugs around loose. Can you beat it?"

With that he climbed into the front seat, waved to me and drove away. I let out a sigh and then almost began giggling with sheer relief. My nerves were in far from the best of shape, I realized.

I went straight up the steps of the rooming house and punched the bell. A few minutes later the old woman

in the red sweater opened an inner door and peered through the screen at me. She had a lined bitter face and clutched the sweater at her throat as if she were expecting the worst from me.

I gave her the lost sister routine, and to my amazement it clicked perfectly. "Yeah, I guess she's the one in number four. That's one floor up, first room to the right." She said this as she unfastened the catch on the screen door. I pulled the door open and edged past her before she could say or do anything else.

"I'll go right on up and see her," I said, with a foot already on the stairs.

"Do whatever you like."

THE DOOR of number four was closed but not locked. I knocked once, lightly, then twisted the knob and pushed the door inward. There was a lamp in the corner of the room, a dim lamp with a dusty rose-colored shade, and by its light I saw a small room, cheaply furnished with a chest of drawers, an odd chair and a simple bed with a stained walnut headboard.

The girl was lying on her back on the bed, her arms close to her sides, and she was regarding me with grave steady eyes.

"Well, what do you want?" Her voice was low and pleasant, but with a sharp edge to it. It was a well-bred, expensive voice, a voice that governesses and teachers had worked hard over.

I walked to the side of her bed, wondering if she were going to start screaming; but she wasn't the screaming type apparently. She sat up and regarded me with a puzzled uncertain expression.

"I heard you the first time," I said. "I want to know about a man named Simon Knowles, for one thing. So let's get down to business."

I pulled a chair over and sat down facing her squarely. "Do you want me to keep going?" I said. "How and why did Simon Knowles die? Where did you meet him? What's the answer to that set of disappearing scales at the Adelphia theatre? That's enough for a while. Start talking!"

She looked away from me, a faint frown on her forehead. "You must forgive me," she said slowly. "I don't understand what you're talking about, but so much is happening lately that I don't understand—"

She paused, wet her lips slowly and carefully with her tongue, and then glanced about the mean little room with an expression of resigned confusion. "This room, for instance. What am I doing here? I've been in so many strange places lately and met so many strange people, that I'm—confused. Sometimes, there are moments of awareness, of clarity, and I can act quickly and purposefully—but after those intervals have passed I can't remember them at all. Isn't that odd?" She looked directly at me, a musing little smile on her lips. "You're a doctor, aren't you?" she said, and her tone was faintly accusing.

"No, I'm not a doctor," I said. "I'm a reporter trying to get to the bottom of a story."

"I don't think it's honorable of you to lie to me," she said. "I don't want to be coddled. Something's happened to me, I know. It's my mind." She put a hand on my arm, suddenly, impulsively. "Please tell me the truth. I'm—I'm not so far gone as you think. Maybe—maybe you can help me."

"What's your name?"

"Reed, Renita Reed."

"Where do you live?"

"I think I live in Vermont."

"You think? Don't you know?"

Suddenly, her manner changed, and the transformation was so vivid and startling it threw me completely off

balance. She sat up straighter, her eyes flashing with anger. Her features were composed, alert, intelligent. She seemed to know precisely what she was doing now; and she was defiantly, recklessly triumphant. "I'll ask the questions now," she said, and her voice was alive and snapping. "What gives you the privilege of crashing into my room this way? By what right are you badgering me with questions?"

"Now look, lady, I told you I was a reporter after some ends to a story. So don't blow your top. I've told you the truth."

"Let me see your identification," she said, raising her voice suddenly. I was fumbling for my wallet when I saw her eyes slide off my face and flash a glance over my shoulder.

The year's prize chump, I thought, spinning around as fast as I could—but it wasn't fast enough.

A fist hit me on the side of the jaw, knocking me to the floor. Sitting up, confused and as unable to defend myself as any infant, I saw a man standing above me, a big man in a tan trench coat, a black fedora, and a square, expressionless face. I knew he was the man I had followed to this place; the one with the dead, unmoving face—the kind of face Simon Knowles was wearing before he took his long sleep.

This man was going to kick me, I knew; but there wasn't much I could do about it. I saw the silken flash of the girl's legs behind him, and heard her voice, sharp and tense: "All right, quickly, *quickly*!" It wasn't the voice she'd used when I first entered her room. It was a voice that belonged to another personality.

The man in the trench coat kicked me then, once in the face and once in the stomach, and after that he leaned over me and slugged me under the chin. That was all I remember.

THE NEXT thing I felt was water on my face. It was cold and unpleasant, so I brought up a hand to keep the water away, and a voice said, "That's better, you're doing fine." Something shook my shoulder, something else wobbled my chin. There was nothing to do but sit up, or let myself be treated like a rag doll in the hands of a baby with tantrums.

So I sat up, opened my eyes. Squatting beside me was a man with a long grave face and slightly graying hair. He wore a blue topcoat, and his hat—a Homburg resting on the near-by chair—was black. The man had a lumpy bruise along his jaw.

"You're a slippery customer," he said, but didn't sound angry.

He was the man who had tailed me from the *Express* Building, the man I'd slugged and deposited in the cab and dispatched to the fictitious address in Evanston.

"Well, what happens now?" I said.

"That was a spectacularly imaginative yarn you told my cab driver. No wonder you're a good reporter. It took considerable convincing on my part to get him to bring me back here."

"Who told you I'm a reporter?"

"I made it my job to find out. You're Jerry Ward, a general assignment reporter for the *Express*."

"What is it about me that fascinates you?" I said.

"Simon Knowles. Now get to your feet and come along. We'll have that little chat I wanted earlier."

He had his hand in his pocket, I noticed, and this time he was watching me very carefully and there was no earthly chance of catching him by surprise.

So I left the rooming house with him and was herded into a waiting cab...

We drove to the *Express* Building,

where he paid off the cab and joined me on the sidewalk. When the cab drove off he took my arm and propelled me along in a direction that took us past the towering height of the *Express* Building.

"Where are we going—and what do I call you?" I said.

"You may call me Smith. And we're turning in right here."

It was a building several doors beyond the *Express*. The ground floor was given over to a luxurious beauty salon—a place where flabby dowagers could be massaged, lubricated, bathed, coiffed, and perfumed for a fee that would keep a normal family in groceries for a month. The facade was of glass and chromium, and the windows were chastely and elegantly decorated with life-size plastic models of women undergoing the treatment afforded within this tabernacle of beauty care.

"Are we stopping off for a mud-pack?" I asked.

Mr. Smith didn't answer; he knocked sharply on the huge brass doors, and they swung inward instantly. I was pushed inside, and a man—or the shadow of a man—closed the door behind us.

"Walk straight ahead, please," Smith said.

THERE WAS nothing else to do, of course. I walked along an aisle formed by glass-topped counters until I reached the rear of the establishment, where Smith opened a door that led into a softly lighted, charmingly decorated foyer. There was a self-service elevator there with the door standing open, and into this Smith waved me. He came in after me, closed the door and punched the button under the numeral '4'. We shot up smoothly and silently and came to a cushiony stop. The doors slid open and we marched out into a corridor

that led to a closed door.

"Patience, we're about at the end of the line," Smith said.

He knocked on the door and it was opened by a young clean-cut young man with the face of a Latin professor and the shoulders of a pro football player. There was another man in the room seated at a desk. He was about sixty, I judged, with a thick mane of gray hair, a lean, good-humored face, and gentle near-sighted eyes. There was a goose-necked lamp on the desk, and a clutter of note book paper.

The room itself was about fifteen feet square and looked as if it had been originally designed as storage space; but there was a tidy cot in one corner, several deep chairs, a table sprinkled with magazines, most of them of a scientific nature, and a tray on which were the remains of dinner. The left-over food reminded me that it was now almost nine o'clock and that I hadn't eaten for hours.

Smith said, "Won't you take off your coat and hat, please?"

"Thanks," I said. The large young man took them from me and deposited them carefully on the cot.

"This is Mr. Jones and Mr. Clark," Smith said, nodding first at the elderly gentleman, then at the younger one.

"And I'm one of the Brown boys," I said. I looked at the old party, the gray-haired gentleman with the calm eyes, and said: "What's the gag, Professor? How'd you get mixed up with these characters?"

Smith was watching me narrowly. "You know Mr. Jones?"

"Sure," I said. I sat down and fished out my cigarettes. "I knew him when he was teaching Physics at the University of California, and I covered him when he came through town on his way to get a Nobel prize. Only his name wasn't Jones then, and he

was in better company."

"You're quite right, of course. It doesn't matter, however." He took out his wallet, fished out a card and handed it to me. It was a Department of Justice buzzer, with Smith's picture on it.

"Well, pardon me all to hell," I said, "but your methods are a bit strenuous."

"So are yours," Smith said, and smiled briefly. "Now we have to get down to business. You saw Simon Knowles the instant before he died. We want the whole story of that, and what happened later."

I hesitated a moment, wondering whether or not I should talk. But I knew the professor's reputation, and for me that was a better guarantee than the Department of Justice. So I talked.

WHEN I finished, the professor spoke for the first time. In a curiously mild voice he asked: "And the girl told you nothing of her future plans?"

"No, I've told you everything."

"Thank you."

"Well," I said, glancing from him to Smith. "What's the story?"

"That girl is trying to kill the professor," he said. "It's our job to see that she doesn't get the chance."

"Well, who the devil is she?"

"She is my daughter," the professor said, and then he coughed and looked away from me. Suddenly his eyes filled with tears, and he began rubbing his forehead with the tips of his long sensitive fingers. In the abrupt silence I glanced at Smith, and he nodded slowly. "You heard correctly," he said.

"But it doesn't make sense," I said; and then realized how weak that sounded, considering that nothing for the past ten hours had made any sense.

Smith lit a cigarette, his long gray face thoughtful. "I can tell you something about it, but I must have your pledge to keep it absolutely confidential."

"That's more than I can give you on my own. I'm a reporter, and it's up to my boss whether we use or kill a story."

"This is the most important story you'll ever come across, believe me."

"Let me call my boss, and bring him in on it," I said. "That's the only way I touch it."

Smith agreed to that, and I called Malcolm. He was impatient and irritable because I wouldn't tell him all the facts, but he said he'd be over in five minutes. Nothing could have kept him away, I knew.

He arrived in less than five minutes, and for once, I thought, his tough composure was a bit shaken. Seeing and recognizing Professor Reed added to his confusion.

"What the devil is all this about?" he demanded.

I talked first, told him what I knew. Then Smith said that he could tell us nothing more, unless we agreed to keep it confidential.

It was a cruel spot for Malcolm, and I saw the battle being waged across his blunt frowning features. He wanted to know what was behind this mysterious business, but to find out he had to swear himself to secrecy. That was telling a starving man that he could order everything on the menu, providing he didn't eat any of it.

But finally he agreed.

"**VERY WELL,**" Malcolm said.

He put out his cigarette and remained standing. "I will not try to tell you this in a dramatic fashion. I will merely give you facts. Three years ago the United States learned that beings from outer space were ob-

serving certain sections of Earth. A department was set up to investigate this circumstance. This department has no official status. You may search the organizations of the government and never find mention of it. It is not even named. It has no offices, no staff meetings in the usual sense of the word. But it has been functioning three years now, and has learned something of the nature and plans of the things that are watching us." He glanced about, nodding. "Yes, that is our name for them: *things*. Just that. We don't know enough about them to call them anything more specific or definitive. However, *things* does quite well as a name. The things have, in the past year and a half, begun to make contacts with human beings. The things are able to take possession of humans, literally move into their bodies. This has happened in our country and in countries with which we can exchange information safely. But about Russia we know nothing.

"The plans of the things are difficult to analyze. We don't know what they want, what their ultimate goal is. They do not behave consistently. Some of their activity is meaningless to us. They seem at times to be plotting with masterful intelligence; but on the other hand many of their operations are pointless and stupid. Our conclusion is that they don't know enough about us yet, or else that their means of implementation are excellent in some areas, but inadequate in others.

"But in the past six months a fairly definite pattern has been emerging. You probably know, being in the newspaper business, that recently there have been an inordinately high number of 'accidents' to important people. And there have been quite a few seemingly unmotivated assassinations. I could give you the exact number, of course, since it's my business.

But I dare say you've noticed these phenomena?"

"Yes," Malcolm said, frowning. "There was Myers, the chemist in Milwaukee, and Nelson and Rensaler, the men working in guided missiles, and—"

"The Director of Defense for New York," I put in, as my memory began clicking. "He was shot by a madman, who was later identified as an amnesia victim from Oregon. And—"

"Yes, all of those, and many others," Smith said. "The number is frighteningly high. In the assassinations, it was always the same. A maniac, apparently, who killed and was killed himself by guards. But the 'maniac' always turned out to be some very normal person who had disappeared from his home a few weeks before. That was the case of Simon Knowles. He was here to kill Professor Reed, and, to add to the diabolic nature of this case, the professor's own daughter was being used to insure the success of the assassination. She disappeared from the professor's home shortly after he was moved here to Chicago for safety reasons. She knew he was here, of course. She was told that, so she wouldn't worry about her father. We had no idea that the possession of that knowledge made her perfect bait for the things. They've got to her now, and are using her to kill her father. She was to bring Knowles here, and they would have been admitted, naturally. Then Knowles would have used the gun that was in his possession. Only the fact that you intercepted him ruined their plan. The things destroyed Knowles because they are perceptive enough to realize that their methods would have been exposed by having Knowles' identity learned *before* he destroyed the professor."

"But it's so idiotic!" I said. "If they can get into Knowles' body, why

can't they get into yours? Or the professor's, for that matter?"

SMITH SHRUGGED. "There are no easy answers in this business. I can only say I don't know. We've done some experimenting which indicated that only specific types of people are susceptible to seizure by the things. But our findings aren't conclusive. For instance we have determined that eight out of the ten assassins we have examined had had histories of skull injuries at one time or another. The autopsy report on Knowles isn't in yet, however."

"For what it's worth, he was invalidated home from the South Pacific after a piece of shrapnel split his head open," I said. "It was from a mortar burst," I added pointlessly.

"Well, that's another case then," Smith said. He paused, lit a cigarette. "The past is never very important in this work. The present and future are everything. We must keep Professor Reed alive until he finishes his present work. It is very important work. He is one of a team of scientists who are perfecting theories that some day may make detection of the things possible. To put it harshly, he must be kept alive if only until his work is done."

"What happened to his daughter after I spotted Knowles?"

"She went immediately to get further instructions."

"Instructions? At the Adelphia Theatre?"

"Certainly. What you've told us indicated that. That 'scale' you saw was some form of time or space machine, and the 'fortune' she received told her where to go to meet her next confederate. She has met him, and has disappeared. And that's where we stand at the moment."

"But look," I said, "when I talked with Renita Reed at the rooming

house, she just seemed confused and bewildered. She wanted me to help her. She thought I was a doctor, and suspected that she had suffered some sort of mental attack. But she seemed normal, although she was upset as hell. What I'm getting at is that she never looked like Knowles or that other character, the one in the trench coat."

"It's possible they haven't taken physical possession of her," Smith said. "It may be only a form of hypnosis. That has happened to a few others—"

He stopped and held up a hand.

We all heard it too, the whine of the ascending elevator.

"That can't be Barten," he said quietly. "He wouldn't leave the front door unless—"

THE LARGE young man crossed the room, passing Smith, and moving with amazing speed for his size. He put his hand on the door-knob, turned it gently, and his other hand slipped into his suit coat pocket. Smith moved in front of the professor.

The elevator came to a stop, and in the close, unbearable silence we heard the door slide open with a pneumatic hiss.

"All right!" It was Smith who spoke.

The large young man jerked the door open, and I flinched involuntarily. I would have hated to have his job.

The young man said, "It's Barten, sir."

Smith relaxed and walked toward the door, as a middle-aged graying man stepped into the room. He nodded at the professor. "His daughter is downstairs at the front door. She's alone, and I thought you'd like to know."

The professor stood up, and his

hands were trembling. "Renita—Renita is here? Please, I must see her."

"We'll go slowly," Smith said. To Barten: "You're sure she's alone? And she's outside, with the door locked?"

"As nearly as I could tell she's alone. And the door is locked. Naturally."

"All right, we'll go downstairs. You understand, professor, I want to make sure everything is all right."

"Of course, of course."

At a nod from Smith, Malcolm and I filed out of the room and into the elevator. The others got in after us, and Smith punched the 'down' button.

When the door slid open at the ground floor, we trooped into the small foyer and then through the door that led to the dark spacious beauty shop.

I had an impulse to giggle as I saw steam cabinets, and pedicure stalls looming up in the shadowy blackness. There was a permanent mixture of perfume and alcohol in the air, a disturbing odor that hinted of the beauty of women and the strenuous measures they took to preserve that beauty. It was this last note of unreality that made me want to laugh. Not that it was funny, God knows; but because it was horrible. The final excruciating element of horror is incongruity, I knew then, and realized that I would have been under better control if this were happening in a ghostly mansion or a subterranean torture chamber.

I was glad of Smith's reassuring bulk beside me and the presence of the quiet large young man who was walking in front of the professor.

And then I noticed something else in that sweetly perfumed stillness: the faint draft of a fresh cold breeze.

"Smith, that front door isn't closed," I said as quietly as I could; but my voice was trembling as if I

were standing naked in a freezing rain.

"Good God!" I heard him cry softly; and then he threw himself before me with a shout, and knocked the professor to the floor.

A shot banged through the silence, echoing madly, and later, it seemed much later, I saw a vivid white flash near the right side of the doorway. Two more shots sounded, so close together that they almost echoed as one report, and I heard someone screaming. A blast of fresh air struck my face as the door swung open with a crash, and I saw a slim, swiftly moving figure, silhouetted for an instant by the winking lights of a tavern across the street. Then it had disappeared, and I heard, or seemed to hear, the fading clicking of high heels. But they were gone so quickly that I couldn't be sure that my imagination wasn't supplying the details I expected.

I WENT toward the front of the shop as a flashlight beam struck through the darkness, touched briefly a ridiculous looking pair of plastic legs, and then swung down onto the body of a man in a tan trenchcoat.

"They must have forced the door after Barten left," a quiet voice said. I realized later it was Smith who had spoken.

"He's got a bullet in his lung," the large young man said. "We'd better get a doctor. The professor's all right." I learned later it was Barten who had the shot in his lung, and not the man on the floor. I heard Malcolm cursing; that meant he was all right.

That was all I waited for. Outside, cabs were cruising in both directions, and to the right, a block or so away, a man was walking with his head and shoulders bent into the snowy wind that was blowing. But except for him, the sidewalks were empty.

I got a cab and gave the driver the address of the Adelphia Theatre. Once before, when her plans had miscarried, she had gone there—it was worth a chance.

The theatre was crowded at this time of night, and the picture must have been a comedy, for the audience was laughing with enthusiasm as I entered the lobby. At that moment I wished to God I had something to laugh at, wished I could step into the theatre and laugh until I was sick at somebody throwing pies at Milton Berle, or whatever it was that had this crowd in the aisles.

There was no one in the lounge, but a bored young girl of about sixteen with a scarf tied over her blonde head. She was looking at a poster that announced the next attraction, and her gum-chewing mouth made it appear that she was moving her lips as she read.

Possibly Renita Reed had asked to be driven around a while before coming here. Or possibly she wasn't coming at all. Then I turned slightly and got a sharp jolt.

The shimmering chromium scale was standing in the corner!

I began to shake a bit, and everything inside me felt as if it were being drawn up into a cold tight knot. Idiotically, I began to think about courage. What the hell is it? In the last analysis it's what you can force yourself to do. Some things I've forced myself to do in the past took "courage." That's what it said in the citation anyway. But this was different. I had to force myself to step onto that scale—the scale that Smith said was some kind of time or space machine. What would happen to me when I did? Would I disappear with the machine into "somewhere"?

I took a step forward and wet my lips. I couldn't do it—but I had to. Okay, I said to myself, if you've got

to, you've got to.

I took a long breath, savoring the air, and then stepped onto the corrugated platform of the scale.

A voice behind me—the voice of the gum-chewing sixteen-year-old—said, "Hey, mister, them scales don't work."

My breath came out slowly. "Thanks," I said.

"Don't mention it. I hope you didn't waste no money. I did, but ain't lucky. Do you believe in luck?" She said this and giggled.

Suddenly a tiny click sounded, and in the curved receptacle below the numbered dial was an oblong bit of pasteboard. I picked it out and stepped off the scale. On it was one word: DELL. That was all. The word was made with lead or ink, but simply pressed into the card. You had to turn the card at an angle to the light to see and read the indentations.

Then, as I stood there frowning at the card, I heard a light clatter of high heels on the steps leading down from the lobby. I turned my back quickly and walked over to where the teen-ager was still reading the poster about the next attraction.

"Looks like a good show," I said.

"Yeah, super. I like musicals, don't you?"

"Yes, very much."

I heard someone step onto the platform of the scale. Turning casually, I saw that she was watching the curved receptacle with a desperate expression. She stood perfectly straight, her feet close together, staring down at the metal slide as if there could be found the answer to some intolerable problem that was pressing in on her. But her oracle was silent. I turned my back and waited until I heard her step down from the scale. When I heard her slow footsteps leaving the lounge, I turned and walked as slowly after her.

OUTSIDE in the snowy night she hesitated a moment under the lights of the marquee. Then, pulling her beaver coat closely about her, she turned and walked slowly along the sidewalk.

I came up behind her and put my hand about her arm.

"Hello, Renita," I said.

She glanced at me calmly, but her eyes were puzzled. "Hello," she said.

I fell into step with her. "You're Renita Reed, aren't you?"

"Yes—that's right." She touched her forehead with the tips of her fingers—her father's gesture—and said: "But I don't know you. Will you be kind to me? I'm not well, I know. I should be home. Would you be good enough to help me get home?"

"Yes, of course," I said. "I'll help you, Renita. But don't you remember me? This afternoon in the rooming house, in that tiny room? There was a bed with a walnut-stained headboard, and a lamp..."

"With figured roses on it," she said, in a puzzled voice. "Yes, I think I remember that. But what was I doing there?"

We had stopped and she was facing me, her pale lovely face frowning and her eyes searching my face as they had searched the empty receptacle in the scale. "You must tell me," she said, speaking swiftly and urgently.

"What does the Dell mean to you?"

"The Dell?" Her face brightened.

"Oh, the Dell! How did you know about that? It was our secret!"

"Whose secret, Renita?"

"It was our secret, mine and Daddy's." Her face suddenly went paler if that was possible, and her eyes became enormous. "Daddy," she whispered, turning away from me nervously. "Is he all right?"

"Yes, he's all right."

Her fingers touched her forehead again. "I don't know who you are, but

you must help me. My father is Professor Reed, and I'm afraid—I don't really know, you see—but I'm afraid he's in trouble. He left me three weeks ago to finish some work in Chicago. I don't know where he is, but we've got to find him. I—I haven't been well lately, but my mind is clear now. You believe that, don't you?"

I did believe her then. She had changed since mentioning her father's name. There was still an air of confusion and bewilderment about her, but now she was a sane human being examining a mystery instead of drowning in it.

"I can get him on the phone," I said. I thought that would be best. I didn't want the responsibility of bringing her to her father now.

We went into the drugstore at the next corner and I called the beauty shop. I talked with a police sergeant first, and then a police captain, and finally Professor Reed.

"I'm with your daughter and she's all right," I said.

"Thank God! Please let me talk with her."

I got out of the booth and Renita grabbed the phone with trembling hands. She talked to him for a few minutes, half-laughing, half-crying, and asking him over and over again if he was all right. She wanted to come to him immediately, but he didn't want her to, to judge from her stricken expression.

"Daddy, I must see you," she said. "I've had—oh, I don't know how to explain it—but a horrible dream that someone was trying to hurt you. I—I've been sick, I think. I can't remember what's been happening to me, and I need you. The Dell, Daddy, you remember, don't you? You could meet me there, couldn't you?"

She listened to him for a moment, and her face became radiant.

"Yes, yes, of course," she said, and

put the receiver back in place. "He'll meet me there," she said.

"Where and what is the Dell?"

"It's a summer cottage, on the lake, about twenty miles from here. It was one of those silly games a father and a child play, I suppose, but we pretended no one else knew about it or could get there. My mother died when I was quite young, and Daddy tried to make that up to me, I guess, by spending as much time as he could with me. We went there summers and never had guests. We sunned ourselves, and read, and I did most of the cooking. It was pretty terrible, I'm sure, but Daddy never complained."

"I'll take you there, if it won't spoil the game." I said. "You haven't been well, you know. I think it would be better if I helped you."

"Thank you. You've been very kind to me. I—I don't really understand why, but so much lately is confusing and unreal..."

"It's all right now," I said.

We went outside and hailed a cab. She gave the driver directions, and we settled back in the comforting darkness and said very little until we reached the Dell.

IT WAS a three room cottage on a bluff overlooking Lake Michigan. There was a large two-storied living room with an immense stone fireplace, and two small bedrooms. A kitchen in the back of the house, leading directly from the living room, completed the rest of it. The furniture was durable, well-used wicker, and there were blanket rugs on the floor. It was winterized for all-year use, but there hadn't been a fire in the place for months and it was bitterly cold. I found some papers and kindling and logs, however, and in ten minutes, the huge fireplace was roaring its warmth through the house. Renita put coffee on, and soon that

civilized fragrance was mingling with the heat.

Professor Reed arrived within the hour. He caught his daughter in his arms and for several minutes they stood that way, the professor patting her and talking to her in a soft voice, and Renita sobbing in a way that shook me right down to the ground.

Finally she got herself under control and went into the bathroom to repair her make-up. I asked Professor Reed if Smith knew he had come to meet his daughter.

"No, he doesn't, I'm afraid," the professor said with a likeable grin. It was the grin of a boy caught in the cookie jar. "He was at the hospital with Barten, who I understand is going to be all right. Anyway, when Renita called, and I knew she was all right, I just came right out here. She is all right," he repeated, gazing at me directly. "I know that. I can tell."

"She seems perfect."

Renita came out then, and went into the kitchen to serve the coffee. She had also found some canned meat and crackers, and she brought them along also. I was hungry enough to eat broiled nails by that time, and it tasted wonderful. After this snack, the professor disappeared with a knowing smile, then returned with a bottle of wine. I put more logs on the fire, and we settled down in almost perfect contentment with glasses of fine dry Burgundy in our hands and the heat from the fire tightening our faces pleasantly.

The professor was talking about his work in an ambling, desultory fashion.

It was all very pleasant.

I'M NOT sure exactly when it changed. Renita was sitting with her arms folded and her legs crossed, her head resting against the

back of the chair. I saw her shake her head as if an illusive, disturbing thought had touched her, and she glanced at her father with bright shining eyes. She looked away from him almost immediately, and her fingers moved up and massaged the frown that had gathered between her eyes.

Professor Reed rambled on, supplying all the laughter for his occasional jokes. I was silent, watching Renita, and she was silent, watching her father.

I saw that her fingers had tightened on the sleeves of her wool dress and she had uncrossed her legs and put her feet together on the floor. She was like a person caught in bonds of invisible steel and straining in terrible silence to break free.

Suddenly I was scared, desperately scared. I had been a fool, a blind idiot, to bring her here to meet her father. I had given her the message from the scale—that one word: *Dell*. That had been exactly what the *things* had wanted to give her. Maybe it was a key word that unlocked a hypnotic state, precipitated a long-prepared sequence of events. These thoughts were racing through my mind as I watched Renita, and as I saw the gleam in her eyes my body began to tremble.

I remembered that she had never worked alone. She was the bird-dog pointing out the prey. The executioner was one of those dead-eyed possessed creatures, like Simon Knowles or the man in the trenchcoat.

The front door was behind me, and I remembered that it wasn't locked. A heavy bar for that purpose stood at one side of the doorway. I got up, sauntered to the front door and put the bar in place.

"Why are you doing that?" It was Renita's voice: quiet, composed, cool.

"You never can tell—might be some tramps in the neighborhood."

"Nonsense!"

I glanced at her, saw that she was watching me closely. Suddenly, I heard a faint sound behind me, a faint creaking sound, as the lock on the door was tried. The professor didn't hear it, nor did Renita.

There was a window about six feet from the door, and I knew that whoever was outside would get to the window next. And from that window the professor was helplessly exposed. But there was a thick cloth curtain, not drawn now, hanging in loose folds at the side of the window. I stepped over quickly and threw it across the pane. That would spoil a shot from the dark.

"Why did you do that?" It was Renita again.

My breath was coming raggedly. The realization that only a matter of seconds had kept something out of this cabin was enough to turn everything inside me into water.

"Ever do any hunting around here?" I said to the professor.

He laughed. "Good lord, no. The good neighbors would run us out for breaking the peace."

"Did you keep a gun for burglars?"

"Say, you've got violence on your mind tonight, haven't you?"

A TIME-TABLE was forming in my head. He'd try the window, and then start around toward the back of the house, moving slowly because it was so dark, and detouring around log piles and things like that, but eventually he'd come to the kitchen door. That wasn't locked either; and he'd come in, dead-eyed, possessed, driven.

The professor was saying, "Well, I kept a shot gun in my bedroom, just in case the telephone went dead

and I had to signal for help in a snow storm." He was laughing at this as I wheeled and strode across the huge living room and into his bedroom. I heard an angry clatter of heels, and as I snapped on the light, Renita appeared in the door.

"What are you doing? Are you mad?" Her voice was low, but sharp as winter wind.

"You know who's outside, don't you?" I said in a voice harsher than hers. "That's what you're waiting for, isn't it?"

"No, no!"

The gun was in a corner. I broke it open, saw that it was loaded. Just like a professor, I thought, with insane irrelevance. Invent atom bombs and leave loaded guns all over the place. I snatched it up and shoved Renita toward the bed. "Fight that hell inside you," I cried. "You know it's there, you know what it's telling you to do. But by God, fight it!"

"No, no." She was whimpering now, the fire was gone from her eyes.

"They want to kill your father!"

"No... please... Daddy..." She crumpled suddenly as if the strength had been drained from her body. I left her on the floor and ran into the living room as a crash of glass came from the kitchen. Professor Reed sprang nervously to his feet.

"What is it, boy?"

"Get down! Fast!"

I ran toward the door leading to the kitchen, and as I brought the gun up, a figure burst into the living room, a staring, dead-faced figure who fired one shot from the revolver in his hand. At the same instant, I pulled the trigger of the shotgun and let both barrels go at his face. It all happened so fast and so wildly that I couldn't follow it. I saw the professor, shaken and white, standing by his chair, and a man with his face half shot away lying in a bloody mess

on the floor.

"It was Renita," the professor said. "They got to her again, didn't they?"

I just said nothing.

We went into the bedroom, and I lifted her and put her on the bed. She was very pale and her breathing was faint. The professor felt her pulse and then patted her hand gently. He stood beside her, holding her hand and staring at the floor, for several minutes before he turned and walked slowly and tiredly back into the living room.

I stood there, watching her pale fine profile, watching her breathing, praying that it would go on.

The professor returned to the bedroom with a cup of coffee in his hand. "She's all right for the moment," he said, and sipped the coffee. "They won't let her alone as long as I'm alive, of course, but fortunately my work is about done. Any trained chap can follow out my leads now." He finished the coffee and looked at me with an apologetic smile. "I hate melodrama, you know, but I've just taken a fatal dose of poison. Some stuff I carry for a tricky heart condition. I've taken it all, and it should take effect—" He glanced at his watch—"in about ten minutes. They won't bother her after I'm gone, of course."

I swallowed hard, but there wasn't anything to say. I could only stare at him, hoping I could take this as well as he was doing.

"I'm going in to lie down now," he said. His face was looking a bit white and pinched. "Stay with her, please, and—help her."

"Yes, I'll help her."

He bent and kissed her on the forehead, and then, with a courteous smile for me, he went into the adjoining bedroom and I could hear the springs creak as he stretched out on the bed.

I waited for fifteen minutes and

called Mr. Smith.

SO THERE it is, for the record. I bundled up the sheets of copy paper, and took them into Malcolm's office. He nodded to me, and then, seeing my face, he said: "You'd better knock off, get some sleep, get drunk, or something."

"Or something," I said.

There was an ache between my shoulders and my mouth was dry from too many cigarettes and as I stood in the washroom splashing cold water over my face, I was thinking of what he'd said when he asked for the report: *This thing will happen again, Jerry. Maybe tomorrow, maybe next week.*

Well let it, I thought.

I picked up my hat, put on my coat, and lit a cigarette I didn't want before going down to the lobby in the elevator.

Renita was standing near one of the tall marble columns as I walked into the lobby. This had become a habit in the six weeks since her father died. We had dinner together, occasionally, at a small Italian restaurant I had been going to for years, and over Chianti, we listened to loudly sung arias and talked about anything except what was on our minds.

I took her arm and we went out into the cold darkness.

"Hard night?"

"Just the old routine," I said.

We walked along the boulevard and the feathery coldness of the snow in my face felt very good. Suddenly Renita squeezed my arm and looked up at me with a faint smile. It was one of the few smiles I'd seen on her face.

"Do you think it's all over?" she asked. "You know what I mean."

"No, I don't," I said. Smith had gone to Colorado Springs a week after Professor Reed's death, to protect an

industrialist whose factories processed a specific and essential ore. Other men were walking through this same night, fighting a menace that couldn't be seen or heard or understood, and whose motives were a bottomless mystery. No, it wasn't over yet; but there were new forces going into the battle for our side. Factory sites were being chosen for the production of certain equipment and machinery based on formulas devised by Professor Reed and his associates.

Not over, of course, but the inequality of the adversaries was being diminished each day.

I looked up into the sky, watched the giant swing of the Pleiades, the supple curve of the Big Dipper, and

the jeweled belt of Orion, and I wondered, as I did whenever I looked upward, *where are they coming from?* From one of those tiny jewels winking in the Milky Way, or from the giant sun of another galaxy? Or from beyond that? From the ends of space itself? From where?

"Well, let them come!" Renita said unexpectedly, and her voice was hard and confident.

I grinned down at her, and pressed her arm against my side. "Yes, let the bastards come," I said. "And meanwhile let's have dinner and a bottle of wine."

THE END

TEMPORARY IDIOT

By

JON BARRY

MARK WELL that word "feedback", for it is the idea which lies at the basis of cybernetics, and cybernetics is the science which lies at the basis of the forthcoming "second industrial revolution." In these pages we've yakked endlessly about the miracle of cybernetics which some day is going to make the familiar "robotics" of science-fiction—science, not fiction!

There's nothing complicated about the concepts of cybernetics and its basic root "feedback". Feedback refers to the output of a system which is used in turn to control the input of that system. In human beings, for example, we use feedback almost constantly. When we do such a simple thing as picking up a pencil, the amount by which we haven't picked up the pencil controls just how the hand will continue to move. This smooth order and response of feedback is the normal way of things. Interfere with it and you goof up the works. Thus there is a familiar disease, a sort of palsy, in which the nervous system's feedback scheme is interrupted and the hand which goes to pick up the pencil or light the cigarette trembles nervously in indecision, incapable of completing the act.

Now scientists have discovered a method whereby feedback may be interrupted in people without injuring them for the purposes of study. When we speak, our ears pick up our own words about a thousandth of a second after they're spoken. This in turn governs how clearly and loudly we speak. It is strictly a case of feedback.

We are controlling our output of sound by using some of that sound.

The scientists have taken a microphone-earphone arrangement and, using a tape recorder, they are able to introduce any desired degree of lag between the speakers' sounds and their hearing. You can imagine what havoc this creates. At first, when no lag is introduced, the speaker talks clearly and without trouble. But then as a considerable amount of delay is brought in, say a twentieth of a second or so, the speaker literally goes "off his rocker". He swears and shouts and gibbers in an effort to make himself understood. After a short time of this he is effectively in a state of temporary neurosis and nervous breakdown—without personal permanent injury.

The primary use of the new technique, of course, will be for psychologists who have longed for a safe system of subjecting humans to nervous strains without injuring them. The only place in the human system where this can be done is in the chain between speaking and hearing, because any other interference with the feedback chain is dangerous. It would hardly have been thought, previously, that cybernetics would supply the clue to the method.

Because cybernetics is concerned with the analogies between mechanical systems and the human system, it is bound to deliver many other useful techniques in the future.

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NUISANCE VALUE

By Walt Sheldon

**Everybody went nuts on this tiny world
until Jim learned nothing could be
right unless it was wrong!**



It was a kind of apathetic madness somehow more frightening than violent insanity

JIM LANIER felt he knew every cell in every body perfectly. He'd examined all of them so many times—once a week for the past fifty weeks to be exact.

And now he was doing it again.

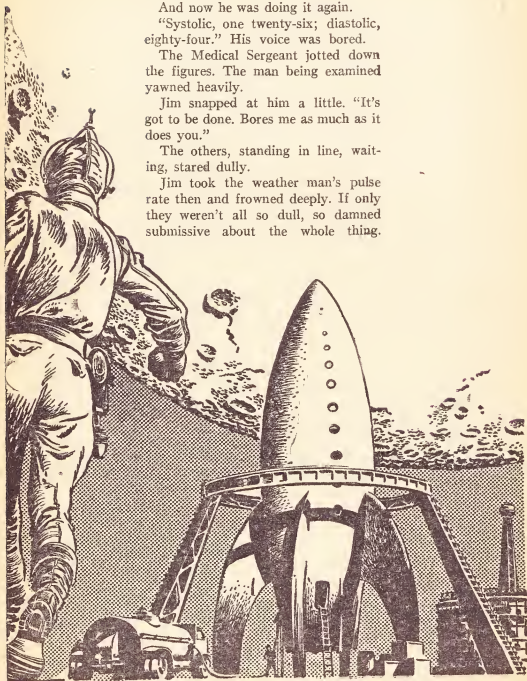
"Systolic, one twenty-six; diastolic, eighty-four." His voice was bored.

The Medical Sergeant jotted down the figures. The man being examined yawned heavily.

Jim snapped at him a little. "It's got to be done. Bore me as much as it does you."

The others, standing in line, waiting, stared dully.

Jim took the weather man's pulse rate then and frowned deeply. If only they weren't all so dull, so damned submissive about the whole thing.



There was the real danger. Jim, of course, was only a general physician, and according to strict regulation here on Moon Jr., wasn't supposed to think about psychological dangers. Colonel Armbruster, the psychiatrist, was supposed to do that. But Colonel Armbruster, these days, was just as dull and apathetic as the rest!

A spaceman, first class, came into the dispensary. Jim recognized him as Flock, the commanding officer's orderly. Flock started to cross the gleaming, polished plastene floor, walking toward Jim. Those in line stirred and stared at him. He couldn't possibly be doing anything important, because nothing important or exciting ever happened here on Moon Jr.—but they stared just the same. His appearance broke routine. Anything, anything to break routine....

Flock saluted, then leaned toward Jim and spoke in a low voice: "Sir, I'm out of order saying this, but I just got to."

"Go ahead then," Jim said.

Flock frowned, rippling his forehead. He was an old line spaceman, from the days when rockets didn't even carry men. His face was freckled and wrinkled; his reddish hair was beginning to be touched with gray. Looking at him, Jim remembered that he hadn't been here as long as most; the deadly apathy hadn't quite hit him yet. That was why he'd taken it upon himself to come here and say something out of order, out of routine.

"It's the old man," Flock said, biting his under lip.

"General Stimmons?" Jim lifted an eyebrow.

"I—I just wish you'd look at him, sir. Any excuse'll do. I didn't go to Colonel Armbruster because—well, sir, the Colonel's about in the same shape, too, if you know what I mean."

JIM KEPT his face as blank as possible, but behind the facade of his brow he thought: Good Lord, if the old man goes under too, that's the end of Moon Jr. He knew there had been agitation back on Earth to withdraw all personnel from the artificial satellite and let it revolve, dead and gleaming, in its orbit five hundred miles from sea level. It had been there three years now. It was manned largely by volunteers from the newly created Space Force, and the project had been pushed to completion by a handful of eager-eyed scientists and rocket men who subscribed to the truth of the cosmonautic paradox, and realized that interplanetary travel (they fully believed it would be a reality one day) would be next to impossible without this jumping-off place—Moon Jr.

Of course, they had to sell the idea on other things. World Electric, a private corporation, contributed a huge sum for exclusive rights to the hard vacuum five hundred miles out, and the electronic experiments that could be made in it. Several scientific foundations were grateful for a chance at nearly absolute zero on one hand, and undreamed of heat on the other. Biologists flocked to see what amoebae, and such, would do under conditions of gravity more or less cancelled out. The World Government itself set up the weather observation station on the satellite.

No colony had ever been more carefully planned beforehand than Moon Jr. It was almost as if Man had taken a look at God's imperfect world, hitched up his trousers, and said, "Well—let's see how I can do this." Moon Jr. was air-conditioned, color-conditioned, sound-conditioned and, throughout the interior, even shape-conditioned. Hours of work, play and sleep were calculated to a fine op-

timum; tailored to individuals, those in the same groups categorized and tagged. Diets were measured to the last carbon atom. Duties were so carefully defined that a powerman didn't dare oil a telescope motor, or vice versa. There were never emergencies, such as sickness, that might call for this. Moon Jr. was dust free. And germ free. A perfect world.

And out of three hundred and six people who had been shipped into Moon Jr. since its establishment, nearly two hundred had gone completely mad and were in mental hospitals back on Earth right now.

Two out of three lost their minds. That was the way headlines put it; that was the catch-phrase certain commentators liked to use. There was even an organized movement back on Earth to see that the satellite was abandoned. Man had gone too far, they argued—world government was a reality, and the earth was more or less at peace—why invite trouble? Why reach, now, for the stars? The League for Contentment, this outfit called itself....

GENERAL Mortimer Stimmons lifted a weary face from his desk as Jim Lanier entered his office. The desk top was clean—aseptic—like everything else here on Moon Jr. Stimmons was tall, slender, flat belled, and wore a carefully clipped white mustache that exactly bisected his long upper lip. Jim saw a small pad of scratch paper on the desk before him.

The general had been playing tic-tac-toe with himself.

Jim spoke carefully: "Excuse me, sir, but since the supply ship arrives today, I thought I'd check over a few details with you."

The general's voice was tired, but there was a hint of rebuke in it. "What is there to check? You know

your job. Everybody knows his job. It's down in regulations. All of it. How many copies for each form, and even what kind of a pencil or type face to use to fill them out."

"Yes, sir, that's true," said Jim. "However, if there were an emergency of some sort..." He didn't really have any emergency in mind. He just wanted to talk, say anything, and get the general to talk, so that he could watch him.

"The emergencies are all covered by regulations, too," the general said. "Every possible emergency." Something flickered lightly in his eyes for a moment. "Sometimes I almost wish there were some kind of emergency they hadn't thought of..."

Jim edged toward the desk, and then casually sat against the edge of it. "Yes, sir," he said sympathetically. "I feel that way, too, in my own job. As you know, nobody ever gets sick. The safety engineering, for instance—rounded edges, shields, fatigue factors eliminated—why, I haven't treated so much as a cut thumb since I've been here."

"Yes, I know." Stimmons stared at his desk.

"You're looking in pretty good shape, sir," said Jim, more or less blindly continuing the conversation.

Stimmons looked up quickly. "Yes. Yes, damn it. Perfect health—I've never been in such perfect health. I—this may be a strange thing to say, Lanier, but sometimes I wish I could just wake up one morning and have a headache. A hangover. But liquor isn't permitted on Moon Jr., of course. Or indigestion. I used to get it from coffee, sometimes, but I've almost forgotten what coffee tastes like. I wouldn't even mind waking up with a sniffle some morning—just to be able to sneeze and have something interesting to do."

"Go on, sir."

"This supply ship arriving today. Anybody you know on it?"

"Well, yes, sir. The medical officer, as a matter of fact. Major Ramey. We went through space surgeon's school together."

STIMMONS NODDED. "Then you can understand how I'll feel when we unload through the decontamination locks. The ship's skipper happens to be an old classmate of mine. And what will we do? We'll face each other through thick glass and talk over mikes and speakers. Five minutes of non-duty conversation—that's what the regulation allows." Stimmons leaned far back suddenly in his scientifically contoured chair, and stared ahead blankly, dully. He waved at Jim absent-mindedly. "I'd like to be alone now, Lanier, if you don't mind."

"Very well, sir," said Jim. He rose and went to the door. Just before he left the office he looked back again and saw that the general was still staring dully, hadn't moved his eyes.

He thought about it as he walked back through the corridor toward the dispensary. There was little doubt of it: The general, the old man himself, was showing the symptoms that had become so familiar. "Satellite Psychosis," was the popular term. Actually, it was just another form of catatonic schizophrenia, such as prisoners had acquired in the days before social reconditioning took the place of prisons. When Satellite Psychosis was fully developed, there were the same symptoms of apathy, waxy flexibility, and occasional flashes of echopraxia, echolalia and automatism.

And it was creeping up on the old man.

That would do it, when the commanding officer himself went to pieces. That would really do it. The League for Contentment would have Moon Jr. abandoned in a matter of weeks, if

that should ever happen.

A recorded voice sounded suddenly on the speaker system: "Earth trip now arriving. Earth trip now arriving. Alert number one for duty stations, all personnel. It is now touch minus five. Touch minus five. Proceed toward duty stations."

JIM TURNED almost automatically toward the decontamination locks. Conditioned to his duty now; moving unthinkingly, like a sunflower following the sun. And he realized this and smiled a little sadly to himself. It wouldn't be long before Satellite Psychosis would get him, too. It was a sort of race. You just waited to see which would come first—the psychosis, or the end of your tour of duty.

He turned into the main corridor, and Flock, the general's orderly, appeared and fell into step with him. Flock had an old spaceman's unhurried step.

"Did you see the general, sir?"

"Yes."

"Is it—well, is there danger, sir?"

Jim looked at Flock. Blue eyes, earnest, sincere—something in them that called for trust. "There is a danger," he said. "There's something they overlooked when they made their plans and set up the command function of Moon Jr. Commanders always take a much shorter tour of duty than anybody else, as you know. This naturally lessens the risk of their getting Satellite Psychosis. But one of the important ecological factors in a withdrawal type of mental sickness is suggestibility. You follow me, Flock?"

"More or less," the old spaceman said dryly.

"*Earth trip braking in,*" said the speaker, as photo-electrics were touched off by another stage of the landing, and a second strip of the record activated. "Touch minus two.

Stand by at duty stations."

Jim quickened his step a little, but scarcely heard. He kept talking: "If you look up the records, you'll see that the onset of S.P. takes less and less time. In other words, after a little while here, its victims, through suggestibility, practically expect to get it. Literally bring it on—think themselves into it."

Flock said, "The old man's tour is up in sixty days. Think it'll hit him before then?"

Jim smiled a little. He studied Flock's face again before he answered. And he answered carefully: "I've been thinking about this thing a long time," he said, "and maybe I'll be able to answer your question a little better after the supply ship leaves."

Flock glanced at him sharply. "You're up to something, doc."

"You might put it that way." Jim was still smiling.

The task of the medical officer during unloading was supervisory; very little actual duty. Ordinarily, he stood in his germ-proof booth and simply watched the cargo handlers in the decontamination lock. When all the goods had been transferred from space ship to lock, the handlers would leave and the compartment would be flooded with perborine gas for an hour or so. Then, germless, the stuff could enter the germ-free world inside the satellite.

Regulations made an inspection by the medical officer optional. No one ever chose to inspect. There were never any discrepancies, after all, and the perborine always took care of everything.

THE MEN at their duty stations this day, therefore, were somewhat surprised when Jim Lanier chose to enter the decontamination lock and

look over the shipments personally.

It had been a long time since a medical officer was anything but apathetic about the whole operation.

They shrugged, however, and they watched Jim enter the lock, and they watched him go over all the new supplies for a while, until they saw that nothing really new or interesting was going to happen, and then they yawned and turned away again.

No one watched him closely enough to see him slip a small package under his coat—one that the ship's medical officer, Major Ramey, had quickly given to him.

The supply ship unloaded quickly and smoothly and blasted off again on schedule, and without a hitch. It was always that way. Yawning, the men went back to their posts and their carefully prescribed duties aboard the satellite once more.

Less than two weeks later, one Spaceman Second Class Gilfoyle reported to the dispensary complaining of a sore throat. It was a wondrous thing: And precipitated a whole day's awed gossip among the personnel. But Spaceman Gilfoyle presently was forced to share the spotlight. A meteorologist and a physics lab technician both came in the next morning with the sniffles. Jim treated them; he pulled one off duty for forty-eight hours and sent the other back to his post. A powerman from the pile rooms came down with mild dysentery next. Everyone gaped, amazed, when they heard the news. This was unheard of—sickness here, in this perfect climate, here on Moon Jr.!

Before three weeks had passed, nearly half a dozen beds in sick bay were occupied, and almost twenty people were taking pills or some other kind of medication to their posts.

It wasn't until thirty days had passed, however, that everyone be-

gan to notice the secondary effect of these sicknesses. Hasty fill-ins had to be made in all departments where sickness had struck, and work schedules were in a hopeless snarl. A few people became absolutely confused, and some of these developed stomach aches or migraine headaches that, as far as Jim could tell, were completely psychosomatic in origin. Colonel Armbruster, the psychiatrist, said he would know better after he studied the cases a bit. He said they looked like pretty interesting cases. He looked better, brighter in the eye than he had for a long time.

Meanwhile, a technician in the biology department, who had been observing and carefully noting the details of some cultures exposed to controlled cosmic radiation, found himself unable to do the work of his two colleagues who were down with the gripe, in addition to his own. He developed—with the help of a radio technician—an electronic method of recording the data. Interest perked up in the biology section. And in other sections and departments. Men suddenly found their jobs a little more difficult, and were suddenly required to use their heads once more.

ALL OF this shuffling and cross-shuffling created an administrative mess, of course. General Mortimer Stimmons rolled up his sleeves and duffed into it.

He began to look better than he had in months.

When he himself came down with a severe head cold, he refused to take Jim's advice about resting and said, "Just shoot me full of something to keep me awake, doc—I'll manage it. Got too much work to leave it. I'm working out a new recreation deal for the pile room gang. Not exactly according to regulations, but I think it's going to do the job even better."

The end of General Stimmons' tour came. The supply ship brought the usual staff of doctors and psychiatrists to nurse him back to health on the return trip. They all gaped, open-jawed, when they saw him. He beamed, walked with a springy step, and his skin had a pink, healthy glow.

They could scarcely believe their ears when he said, "You might as well go on back, gentlemen. I think I'll put off my leave a while. Too much to do at the moment."

Before the rocket left that day, the supply master went over the requisition form that the medical officer of Moon Jr. had made out for him.

Everything seemed routine enough, until he came to one item on the list. He looked at Jim Lanier queerly, pointed to the item, and said, "Is this correct?"

"Is what correct?" asked Jim, leaning over the list too.

"This item here. One dozen fly swatters. Are you making a joke, doc?"

"No," said Jim solemnly. "The flies have been getting awfully pesky around here lately. You know, it might even be that they carried in the germs that brought this latest wave of colds and things."

The supply master stared at Jim. "But I thought there were no such things as flies on Moon Jr.! How the devil did they get in?"

Jim glanced toward the top drawer of his desk where he kept a little box made of wire screen—the one that had been full of fine, healthy specimens of the common house-fly when Major Ramey had passed it to him. He was keeping the box as a souvenir. Some day, when the first interplanetary jump had been made from Moon Jr., or one of its successors, he might tell the whole story. But right now, as he knew from the news bulletins, public opinion back on Earth was

just swinging in favor of the project again. The fact that not a single psycho case had been sent back in sixty days was largely responsible for it. So the world wasn't quite ready for the truth of the matter yet.

Jim didn't tell the supply master

the truth. He smiled at him, looked him right in the eyes, and perpetrated an unmitigated fib.

"I haven't the slightest idea how such a nuisance ever came to Moon Jr.," he said.

THE END

NO SHOCK TOO GREAT

By A. T. KEDZIE

THE ABILITY of substances to stand to what is called heat shock is limited to relatively few. The most famous of these is fused quartz—that remarkable glass-like material composed of almost pure silicon dioxide (i.e. "sand"). Fused quartz can stand rapid immersion in intense heat and then a quick plunge into ice water without cracking or spalling. There are few substances which can take this heat shock. And right now with the development of rocket engines and other high temperature devices, the problem of heat shock is very important.

A mineral known as petalite appears to offer many of the qualities looked for in a heat resisting substance. Petalite is a blend of silicates of aluminum and lithium and has unique properties as far as heat shock and mechanical strength go. It has been known for a long time, but only recently have engineers begun to apply it to the throats of jet and rocket engines. In these devices where the temperatures range from twenty below to two thousand degrees above zero, and where these changes

in temperature take place within minutes, it is easy to say that some substance must be used which is capable of resisting heat shock. Petalite looks as if it will fill the bill.

Wherever conventional ceramic materials have been employed—as in refractories, spark plugs, cooking utensils, etc.—the new mineral may have a future. But primarily, it will be used in rocket motor linings, not in the combustion chamber itself—which in a regenerative rocket motor is cooled by the incoming fuel which surrounds it and hence may be made of a heat conducting metal—but in the throat and edge where the emergent gases create intolerable conditions. The early experimenters with rocket engines had that problem to contend with, and it still dogs the footsteps of present day technicians.

One by one, problems of materials used in rocketry are being licked; fuels, refractories, and metals (titanium etc.) are being supplied for the purposes for which they're needed. The age, a golden one, we hope, is coming!

SENSIBLE SECRECY

By JOHN WESTON

WE'VE OFTEN held forth against the methods of secrecy and classification which seem to have enveloped the world of science since the beginning of the Second World War. We've protested against this compartmentation of knowledge on the grounds that the secrecy prevents scientists from doing their best work. We've felt that this is a terrible chain around modern science's neck and that eventually we'll pay for it.

This hasn't been quite fair. It must be remembered that among the men responsible for the welfare of the country were certainly many scientists, men of good will, who were just as anxious as we to see that science progressed. In addition they had the responsibility of having to prevent the omnipresent enemy from getting a lot of valuable aid by studying our available science. Now that we've examined the entire picture, we can see they've done pretty well, and that scientific research hasn't been quite so badly hampered as we've thought.

The "secrecy sponsors" have really used a very sensible and intelligent approach to the matter. They've divided scientific reports into three classes. Class I concerns general instruments and techniques which are of particular value to industry. These are available to everyone.

Class II involves certain nuclear reaction matter which is available to certain types of researchers.

Class III, consisting of topics which might be called "top secret", is available only to very select groups for it involves weapons.

An examination of such a method of classification seems to indicate that it's reasonable and certainly not too hard for general scientists to adapt themselves to. The success of recent advances in physics and chemistry and medicine shows that this seems to be the case. American science won't dry up at the roots for lack of information. The process of sensible secrecy has taken care of that!

★ ★ ★

FLIGHT TO DISHONOR

By Gerald Vance

Drake, his heart filled with poisonous hatred, became a traitor to his people. But he forgot that no poison is stronger than its antidote!

THE VENUSIAN water-front was a garish microcosm of human evil. Hard-eyed women slipped through the sense-drugging smoke looking for men—of any sort, in any condition, from any planet. Gamblers, thieves, simpering perverts, sat at tables against the wall, drinking the sickly sweet Venusian *kilaris* and watching the women, watching each other, searching for some sign of human frailty or weakness, searching for someone they might cheat or rob or betray.

Drake sat alone at a corner table. His hand was curved loosely about a glass, a cigarette hung from his thin lips. A tall man with a spare hard body, he watched the crowd with eyes that were bitter and mocking. There was no compassion in his face. He was laughing at these dregs, these human vultures; and he laughed at himself because he was one of them.

Thin reedy music filtered through





Aware that he was no longer alone, Drake slowly lifted his hands from the chart...¹

the room. Occasionally a woman's scream split the air. Or a man's curse crashed against the walls.

A girl emerged from the swirling smoke before Drake's table. An Earth-girl, she smiled at him from a tired pale face and put one hand on her hip. "Hello there," she said. "Do you want company?"

"Not yours," Drake said, glancing at her with impassive eyes.

She shrugged and strolled on.

Drake sipped his drink, wondering why he had rebuffed her so coldly. He had wanted to hurt her, of course. That was the great and wonderful joke. You hated those who were like yourself—that was it.

A scream sounded. A woman cried, "Don't! Stop it! Let me go!"

Drake turned lazily toward the sound which was coming from the adjoining table. The Earth-girl was struggling with a huge Venusian. He held her on his knee and was roaring with laughter as she struggled to escape his embrace.

No one else paid any attention to the scene. It was too common an occurrence to cause more than mild interest.

The noise bothered Drake. He glanced sourly at the struggling pair, hating them both, but hating the Venusian slightly more than the girl. For that reason he acted. He picked up a bottle from his table and slapped it viciously across the Venusian's face. The Venusian leaped to his feet with a snarling cry of rage hissing through his lips, but Drake moved faster and kicked him squarely in the stomach. The Venusian went down to the dirty floor and lay there writhing in pain.

"You were making too much noise," Drake said in a quiet almost courteous voice. "No offense, understand."

He returned to his table, the Ven-

usian picked himself up and limped away and it was over. The music soared up again and the tiny flare-up was lost like an extinguished match on a black and windy night.

The girl stood before Drake's table, slowly rubbing a bruise on her left arm. "Thank you very much," she said.

Drake shrugged and sipped his drink.

The girl hesitated an instant, then sat down at Drake's table with a defiant smile. "Now that you have befriended me, you cannot ignore me. You have made yourself responsible for me. May I have a drink?"

Drake nodded at his bottle and an extra glass on the table. "Go ahead." "Why are you so bitter? A woman, perhaps?"

"No analysis, please. You can have a drink, but not my life story."

"Why? Is it so sad?"

"We aren't talking about it, remember? If you want to hold someone's hand, give me back my drink and be on your way."

"Oh, all right." The girl drank a glassful of the harsh liquor and sighed gratefully. "That's better."

Drake studied her as she poured another drink. She was about twenty-eight or twenty-nine, he judged, and not bad looking. Her hair was dark and drawn back severely from her thin but well-moulded features, and her eyes were clear and deep blue. She seemed nervous, he thought, in spite of her effort to be casual. What he could see of her figure was quite all right.

"Would you like to come to my apartment?" she asked him a moment later.

"Why?"

"We might talk, have a drink or so, providing you bring along a bottle. It might be pleasant."

"There's always that chance,"

Drake said dryly. He looked at her and she lowered her eyes. He saw a flush of color moving up from her throat to her cheeks. "We do what we can," she said, looking at the scarred table top. "We must stay alive, although God knows why. Life isn't much fun."

"Don't tell me your sad story either," Drake said. "I am not interested in details of dull lives. Mine included. Nothing is more boring than the maundering account of how badly we've been used. Where is your apartment?"

She mentioned an address, a rather good one. Drake raised his eyebrows at her, but she shrugged and said, "It was a gift from an old friend. He is taking it back next week, I believe."

Drake didn't want to go with her; nor did he want to sit in this reeking cesspool any longer. He chose what seemed the lesser of two evils.

"Very well, let's go," he said. "What's your name?"

"Vanya."

"Undoubtedly an invention, but what's the difference? Come on." He paid his check and they walked out together....

HER APARTMENT was simply and tastefully furnished. It overlooked the harbor where two of Venus' oceans conjoined. A light breeze stirred the beige drapes. Drake sat down and crossed his long legs. The girl asked him to make himself comfortable, pointed out cigarettes on a low table, and then excused herself and left the room. Drake lit a cigarette and smoked idly, watching the smoke curling toward the high ceiling and thinking about nothing at all.

The door Vanya had used in leaving the room opened again, and without looking up, Drake said: "Okay, what's the game?"

A man's voice said, "You are not surprised?"

Drake turned his head and saw two men standing in the doorway. They were Venusians: huge, patient-seeming types, with flaccid jowls and lemon-colored skins.

"Hardly," Drake said. "It was all too pat. Now what the hell do you want?"

"Ah, a direct type. That is fine." The man who spoke had a faint scar on his left cheek and seemed to be in authority. He entered the room and sat down in a chair facing Drake. The second Venusian also took a seat, but on the far side of the room.

"We need your help, Commander Drake. Yes, I know your old title, you see. My name is Arish."

Vanya appeared in the doorway. She didn't meet Drake's eyes. "May I go now?" she said in a low voice.

"Of course, of course," Arish said.

"They made me do it," she said, speaking in a rush. "I hope it doesn't make trouble for you."

"Forget it," Drake said, smiling cynically. "But next time you tell a man to bring his own bottle, be sure to hide the ones in your apartment." He pointed to a cabinet in the corner in which there were half a dozen bottles of liquor. "It might set your chump thinking—as it did me."

Vanya wet her lips and then, turning suddenly, hurried out the front door.

"And now," Drake said to the scar-faced Venusian, "what do you want of me? Obviously you've gone to the trouble of finding out about me, so I'm hoping that your trouble won't be wasted."

"We hope not, Commander Drake. We know that you were in the Space Arm of Earth for many years and that you acquired a brilliant record. We know that you got into difficulty with your commanding officers eight

years ago and were—ah—dishonorably discharged. Is that correct?"

"Perfectly," Drake said coolly.

"It was for disobedience of orders, we understand. You exceeded your authority in capturing a pirate ship, and were therefore thrown out of the service." Arish smiled sympathetically. "Instead of giving you a medal, they chose to disgrace you. You had enemies in the service who were jealous of your reputation, of course."

"I suspected as much," Drake said dryly.

"Very good. Now we know that at the moment you are without funds of any kind."

"Correct again."

"Thank you. We can remedy that, perhaps. We want you to do a bit of work for us. Nothing very difficult or dangerous. Does that interest you?"

"Of course. What sort of work?"

ARISH PAUSED delicately. "We wish you to prevent an Earth ship from leaving here for Saturn tomorrow night."

"Why?"

"That I cannot tell you. To be frank, I do not know myself. This ship, and certain papers aboard her, are what you might call pawns in a mighty chess game. Earth wishes to move the pawn, we wish to keep it here. That is all I can tell you."

"Okay. What do I do?"

"You accept our proposal?"

"Yes. Does that surprise you?"

"Not actually, but your ready compliance is more than we dared expect. We feared you might have a lingering loyalty for your native planet. Despite how they treated you, we thought that—"

"Let's don't talk about it anymore. Earth is just a ball of cooling iron about forty-six days to my left. I'm a realist. I learned that words like loyalty, idealism, patriotism, are like

so many rings of smoke. They blow away in any breeze and cease to exist. They are platitudinous pap to be fed to school children. Now what do I do, and how much can I make?"

"Excellent. The money will be adequate, I'm sure." He mentioned a sum and Drake smiled agreeably. "Now our plan is this: We have a Space Arm uniform, with suitable insignia for your old rank of Commander, in a hotel room not far from here. Wearing that, you will have access to the Earth port here, and once inside, I feel you can devise some means to prevent Space Ship 311 from reaching Saturn on schedule tomorrow night. All we ask is a few hours delay."

"It's not so easy as you make it sound," Drake said.

"We are paying you to be ingenious, Commander Drake."

"Well, I'll take a crack at it."

"Here is the address you will go to now," Arish said, handing him a slip of paper. "Reconnoiter the port tonight, if possible, and then let us know of anything you need."

"How will I get in touch with you?"

"We will keep in touch with you," Arish said, underlining the word 'keep' slightly.

"And when do I get paid?"

"Half now, and the remainder when you can assure us that Space Ship 311 will not reach Saturn on schedule."

"Very well," Drake said, standing. "Let's have it then. I'll collect the rest tomorrow."

"You are confident."

"That's about all I have left," Drake said, and accepted a roll of money from Arish...

A ROOM HAD been reserved for him at the address Arish had given him. He found a Space Arm uniform hanging in the wardrobe, and

on a shelf beside it there were the flaring golden wings that denoted a Commander's rank. Drake looked at them for a moment, a musing smile on his lips, then undressed quickly and went into the shower. He resolutely kept himself from thinking of anything at all as he soaped his lean muscular body and rinsed himself under a stinging spray of cold water. After that he dressed, slipping into the uniform with an ease that came from long practice. He buttoned the twin rows of gold buttons on the tunic, his fingers working automatically, and buckled the heavy leather belt about his flat waist, and pinned the flaring wings to his sleeves. Slinging the short black cape over one shoulder and putting the visored cap on his head, he left his room and went quickly down the single flight of stairs to the lobby.

The girl was sitting there in a straight chair. She came quickly to her feet when she saw him and walked to him with short hesitant steps. Drake stopped and looked down into her pale, anxious face. She looked frightened, he thought.

"They made me do it," she said, avoiding his eyes.

"You said that before, in your rooms," Drake said.

"They have my brother in custody. They threatened to give him drugs while he was unconscious, make him an addict. They said they would mutilate him unless I helped them."

"Well, you have saved him from that harrowing fate," Drake said. "You should be happy."

"I haven't got you into trouble, have I?"

Drake laughed shortly. "Don't worry about me—" He paused, trying to remember her name. "It's Vanya, isn't it?"

"Yes."

"Well, don't worry about me,

Vanya. Good-by." He nodded to her and walked out of the cheap hotel into the swarming streets of Venus...

AT THE Space Port, a grimly efficient cadet was checking the papers of all entering the port. Drake stood off to one side of the huge gates, gazing up at the dark sky as if he were checking the weather. He was the picture of soldierly composure as he stood there—smoking a cigarette and looking up at the heavens with a casually interested expression—but his mind was very active. He had to get into the port, but he had no papers, and this grim cadet looked just the type to enforce his regulations on everyone, regardless of rank.

The cadet was being very severe at the moment with two Venusian laborers. Their passes weren't dated properly and he told them with finality that they would have to go to the processing office and get them fixed before they could enter the port. They protested that they would lose a night's work, and they said, crowding close to the cadet in their concern, that he knew them well, had seen them every night for months, and couldn't he let them get their passes straightened out at their lunch hour, or tomorrow?

The cadet said no, finally and emphatically, and they tromped off, mournful and disconsolate.

Drake flipped his cigarette away and approached the cadet.

"Your name, please?"

"Nelson, sir. Cadet Second Class, Jonathan Nelson." The cadet came to attention, saluted stiffly, and fixed his eyes on a point about three inches to the right of Drake's shoulder.

"At ease, young man," Drake said, smiling. "I only wanted to congratulate you on the way you handled that situation. You're doing your job well. What's your Commander's

name?"

"Commander Bailey, sir." The cadet was still at rigid attention, but couldn't control the flush of happiness that had mounted to his cheeks.

"I'll mention this to him," Drake said. "Carry on."

With that Drake strolled casually into the Space Port, while the young cadet let out his breath happily and began composing the letter he would write to his fiancée on Earth the instant he got off duty.

Drake asked a passing workman for the location of Space Ship 311, and learned that it was at the northeastern end of the field. He walked in that direction, his step springy, his eyes straight ahead, and returned salutes with a sharpness that caused several cadets to stop after he had passed and stare in admiration at his rigid, retreating back.

The 311 was on the ground beside its mooring tower, to which it would be hoisted the following morning. Now, bathed in searchlights, it was two hundred feet of slim shining beauty. Workmen were making the last preparations and adjustments under the supervision of lieutenants. Drake walked briskly up the companionway, and returned the salute of the cadet who stood at the doorway of the ship.

"Is the commander on board?" he asked.

"No, sir. He left two hours ago."

"Very well, I'll go aboard. I'm from the Admiral-Inspector's office."

"Very good, sir."

FOR THE first time in eight years Drake stepped into a military ship of the Earth fleet. He paused a moment as memories came back to him, memories of his first flight as a cadet, memories of his first command, and the joy of driving through the void, master of the destiny of every

man on board. He remembered the clean harmonious discipline of his ships, the will and spirit that his men displayed in reaction to his fairness and competence. There were other things, too: the panoramic view of asteroids, comets and star fragments racing toward the visi-screen, and being deflected, miraculously it seemed, by the ship's far-flung gravitational fields; the thrill of spotting a pirate ship thousands of miles off in the void, and the even greater thrill as the rockets of his ship pounded into the chase. And still other things: The coffee alone in his cabin after a gruelling night, the commendations that came occasionally from his superiors, and finally the settling to Earth with the feeling of a job well done.

Well, that was over, long over, Drake thought with sudden bitterness. He glanced ahead, down the clean shining corridor, and squared his shoulders. Now he was going to add something to those memories of his career in the Earth Space Arm. Something not quite so pretty, he thought, but a damn sight more remunerative.

He strode along the corridor of the main deck, passing an occasional surprised cadet or lieutenant, until he came to the forward control room. An idea had come to him in the instant he had paused inside the ship—an idea that would earn him the rest of the Venusian's payment. Rapping on the door of the control room once, he pushed it open and stepped inside. The control room was small, about twenty feet square, and here were the precision instruments and charts that guided a ship through the maze of the void. A flustered cadet sprang from a chair and saluted hastily.

"Sorry sir, I just sat down to tie my shoe."

Drake smiled briefly. "A very sensible thing to do. You're on duty here, I presume. Your name?"

"Merriweather, sir."

The cadet was about twenty, fair-skinned and blond, with light blue eyes and earnest, healthy features. He was deadly serious, and probably not too intelligent, Drake judged. And that was fine.

He glanced about with seeming casualness, but his eyes stopped for a second on the master-chart which outlined the course for the 311's flight. It was set for Saturn, the computing arms locked in place. The arms, like the prongs of a huge compass, triangulated Saturn, Mars, and a dense asteroid cluster about twenty points off Saturn. These were the points on which the 311's course was based. The officer in charge at the blast-off would supply the measurements and figures now on the chart to the pilot, and he would set his course accordingly. A one mill error in the placement of a computing arm would send the 311 hundreds of thousands of miles out of its way. It would cause a delay of six, possibly eight hours. And that was enough. Drake turned to the cadet with the air of a man who had just made a decision.

"Please be good enough to tell your commander that I wish to see him."

The cadet swallowed. "I'm on duty here, sir. My orders are not to leave this room until I am relieved."

"You are hereby relieved then," Drake said.

"The commander isn't aboard, sir."

"I did not ask for any information. I asked you to go to his quarters and tell him I am here and wish to see him."

"Very well, sir."

THE CADET departed, rather hesitantly, Drake noted. He might not be unintelligent after all. When the door clicked shut, Drake stepped quickly to the master chart and

turned the set screw that locked the computing arm in place. As the arm swung free, he moved it in a two mill arc, set it down, and twisted the set screw tight. As he did so, he heard a click behind him. He didn't straighten up; he remained bending over the chart, appearing to study it, but his mind was moving swiftly, carefully. Had the cadet seen him change the position of the computing arm?

"The commander isn't in his quarters, sir. The mate informs me he left the ship two hours ago."

"Oh, very well then," Drake said, turning casually from the chart. "I'll see him later."

"Sir—" The cadet swallowed, halted, and his cheeks were bright with tension.

"Yes?"

"My orders are to see that no one touches anything in this room."

"Those are the usual orders, I believe."

"Sir, you touched that computing arm."

Drake met the cadet's eyes squarely. He firmed his jaw and let his eyes reflect an anger he didn't feel. For perhaps thirty seconds he stared at the cadet, watching him twist and melt under his gaze.

"I might be mistaken," Drake said at last, in a deliberate, icy voice, "but I think you said I touched this computing arm. Is that what you said?"

"Yes, sir. I thought I saw you touch it as I entered."

"You *thought*! What was your rating on your last eye examination?"

The cadet swallowed. "Nine, sir. It should have been eleven, but I had been ill—"

"Please answer my questions. I don't want case histories. Now, Cadet Merriweather, I realize that you are understandably excited about your present responsibilities. That does you credit. However, considering your eye

rating, and the fact that you *think* you saw something instead of being sure of it, I feel that your present lack of control can be attributed to factors other than a too-intense devotion to duty. Do you think I have a point?"

"I don't know, sir," the cadet said, swallowing hard.

Drake felt he had pressed the youngster far enough. He smiled and patted him on the shoulder. "I wouldn't worry about it. I'd hate to tell you how I felt my first night as deck officer on a Space Ship. It's a rough sensation."

"I know, sir."

"You'll get used to it," Drake said, smiling easily. "Carry on."

The cadet wet his lips and seemed on the verge of saying more, but Drake brought his arm up in salute, and the cadet did likewise, hurriedly, and whatever he was going to say never passed his lips. Drake walked out the door, and five minutes later was riding in a car to his hotel. . . .

AS HE opened the door of his room he smelled thick Venusian cigar smoke. He wasn't surprised to see the Venusian, Arish, sitting in a deep chair, his plump legs crossed comfortably.

"Watching your investment, eh?" Drake said, tossing his hat and cape on the bed.

"Of course," Arish said, fingering the scar on his cheek. "What have you accomplished?"

"It's all set," Drake said. "I changed the position of a computing arm on the master chart. The mistake will take 311 at least eight hours off its course. Satisfied?"

"Perfectly. And you?"

"I feel fine. Just fine. I'll feel better with a quart of your stinking liquor in me, but I still feel pretty good."

"Excellent." Arish stood slowly and took a flat sheaf of bills from his breast pocket. "True to our agreement, here is the balance of your payment."

"Put it on the bed. No, I have to sleep there. Put it on the floor. I feel fine, but not fine enough to touch that money yet."

"I thought your scruples had been put away with your childhood toys," Arish said, smiling; but his tiny eyes were watching Drake carefully.

"I thought so too," Drake said. "Now would you please do me the great favor of getting the hell out of here?"

"But of course," Arish said. But as he went out the door his eyes were very thoughtful.

Drake got drunk that night. He slept fitfully, and awoke with a pounding head and a furry tongue. He lay in bed, smoking a cigarette that tasted foul, and wondered, without any real curiosity, what was going to happen to him. For he knew he had taken a step that would lead him into a different way of life. Now he was a traitor—and that did something to a man. Drake had not been particularly honest or upright in the eight years he had been out of the service. He had run contraband, fought in some dubious pirate battles, operated a couple of fly-by-night space lines. But that was larceny, not treason. He had taken the last downward step; he was as low as he could get. There was no redemption left to him. Despite his callousness, his bitterness, his rage at Earth, he felt sick and weary.

He showered, shaved, and got into the uniform again, almost unconsciously. He had sailed under false colors, so there was no reason to change them now.

DOWNSTAIRS he debated what he should do. Breakfast seemed like

a horrible idea, but it would kill time. And after that, what? Drake didn't know.

He went out into the murky misty sunlight and turned to the right. He hadn't taken ten steps before a voice—a loud, surprised voice—called his name.

Drake turned, feeling suddenly vulnerable and naked. An officer attired in a Space Arm uniform—a captain—was hurrying toward him, hand outstretched, a smile on his dark narrow face.

"Drake, this is a pleasant miracle," the man said.

Drake took his hand automatically. "I'm afraid I don't remember you," he said.

"Well, there's no reason why you should," the captain said cheerfully. He was not as tall as Drake, and his body was slim and well-conditioned. His eyes were brown and direct, and his hair was black with wings of gray at the temples. "I'm Captain Riley, Stan Riley; but when I met you I was a cadet, assigned to your ship, the *Sun King*."

Drake had a vague memory of a Cadet Riley, an alert intelligent boy with good stuff in him. But the memory was very vague.

"What have you been doing with yourself?" Captain Riley asked. "Are you with the fleet or have they got you behind a desk?"

Drake couldn't believe that Riley didn't know he had been cashiered, dishonorably discharged from the service. Still, he reflected, it was possible; there were thousands of officers in the Fleet and it was possible to lose track of even your friends. Obviously, Riley didn't know about Drake's disgrace.

They had fallen into step now, walking slowly along the crowded sidewalk. "I'm not with the Fleet anymore," Drake said, answering Riley's

question. "I do a little bit of everything now."

"Nothing you can talk about, eh?"

Drake smiled with unconscious bitterness. "No, I'd rather not talk about what I'm doing now."

Riley was off duty, and asked if he might join Drake for breakfast. There was no logical reason to say no, Drake realized, and so he said yes. But he found that he enjoyed Riley's company. They didn't talk about the Fleet, but Riley was amusing, enthusiastic and undemanding as a conversationalist. Afterward, he said he had some business to attend to, but asked if he might see Drake for a farewell drink that evening.

"All right," Drake said. "Supposing you stop by my hotel. But why do you say a farewell drink?"

"I'm leaving for Saturn tonight," Riley said. "On the 311."

He shook hands with Drake quickly and firmly, and walked away and was soon lost in the crowded street. Drake rubbed his forehead tiredly and walked back to his hotel.

RILEY ARRIVED at Drake's room about six o'clock with a bottle under his arm. He found glasses and poured each of them a drink.

"To the Fleet," he said, and Drake echoed, "To the Fleet!"

They sat down, glasses in hand and Riley stretched his legs out comfortably. "This is the life," he said.

"Yes, indeed." Drake wished Riley would finish his drink and clear out. He found the deception unbearable, and inside he was gnawed with guilt.

"What's your mission at Saturn?" he asked.

Riley shrugged. "Nobody knows. The rumor is we're delivering some papers to our people there. Information they need in a hurry to discuss disarmament proposals at the Interplanetary Conference. Something like

that, at any rate. Why?"

"Just curious," Drake said. The information wouldn't get there in time, of course. Earth's representatives would be at a temporary disadvantage. It didn't seem terribly important; but Drake knew that such apparent trivia often had far-reaching effects on overall decisions and strategy.

THERE WAS a hesitant knock on the door, and Riley glanced at Drake. "Expecting company? I can clear out any time."

"No, I'm not expecting anyone," Drake said. He went to the door, opened it and saw Cadet Merriweather, the youngster who had been on duty in the control room of the 311. The young man looked nervous and frightened; but his jaw was set in hard tight lines.

"I wish to talk to you, sir," he said.

"Come in."

Cadet Merriweather removed his hat and entered the room. He blinked when he saw Riley. He saluted quickly and what was left of his confidence seemed to drain away. "I didn't know you were here, sir," he said.

"Well, why should you?" Riley said in a good-humored voice. "You're not paid to know my whereabouts."

"I came to talk with the Commander," Cadet Merriweather said in a shaky, over-loud voice.

"Do you mean in private?"

"No, sir. Not exactly, sir."

"Well, speak up, man," Drake said.

Cadet Merriweather swallowed painfully. "You moved a computing arm on the master chart of the 311 yesterday. I saw you do it, but I was too confused to report it. But I did order a crewman to follow you, and he reported that you were staying at this hotel. I haven't slept since then, worrying about what to do. But I've made up my mind now. I may be wrong, sir, but I've got to do my

duty."

"What is it you've got to do?" Drake said casually.

"You are under arrest, sir," Cadet Merriweather said, and drew a rocket gun from the holster at his waist. He pointed it squarely at Drake's stomach. "I'm going to take you to the ship commander and tell him what I saw you do. After that the matter will be in his hands. Please be good enough to take your hat and cape and come with me."

Captain Riley stood up quickly, an astonished look on his face. He looked at Drake, then at the cadet, and gave a short laugh. "This is the silliest thing I ever heard. Do you realize what you're doing, Cadet?"

"I realize, sir," the cadet said.

Drake was conscious of nothing but relief. It flowed through him warmly, wonderfully. He had been caught, and the damage would now be rectified. He didn't care what happened to him—but he knew that he still cared what happened to Earth. He felt grateful to Cadet Merriweather.

"The cadet is right, Riley," he said in a quiet voice. "I did move a computing arm on the master chart yesterday. I was paid to do it."

Riley stared at him in amazement. "You can't be serious, Drake."

"I'm serious, all right," Drake said. The feeling of relief was growing, spreading through him with a sensation that was nearly joyful. "Don't look so tragic. No harm will be done. Report the whole sorry business to the 311's commander, reset your course, and that's all there is to it."

Riley's lean dark face was grave now. He nodded to the cadet, and said, "You've done a good job. Let me have that gun, please. I'll take over."

CADET MERRIWEATHER handed him his gun with a relieved sigh. "I'm glad it's all right," he said,

and rubbed his perspiring forehead.

"Yes, it's all right," Riley said, and as he spoke he raised the gun and sent a blast of soundless, smoking heat through the cadet's heart. Merriweather went to his knees, choking with pain, his eyes anguished and disbelieving. "No, no," he gasped, and then crashed forward on his face. In another three seconds he was dead.

Riley turned languidly to Drake. He was smiling slightly, but his eyes were sharp and careful. "I'm also working for Arish, Drake," he said, quietly. "Lucky thing, eh?"

Drake tensed, but relaxed as he saw the point of Riley's gun swing casually about and point squarely at his stomach.

"I don't get it," he said. His throat was dry and he had difficulty speaking.

"They figured two men would do the job better than one. Also, Arish got the idea last night that you were developing qualms of conscience. So he asked me to get in touch with you and see that you remained properly realistic about this business."

"Why did you sell out?"

"And Arish was right. He usually is, of course. You would have thrown the whole deal into the fire because of this stupid cadet."

"Why did you sell out?"

Riley made an impatient gesture. "We're grown men, Drake. Don't ask foolish questions. I liked Venusian money. It comes in larger rolls than that of Earth. That's all."

"You had no reason to," Drake said. "You have no reason to sell out Earth. It doesn't make sense."

"You've got a one-track mind," Riley said, shrugging. He walked to the telephone, still covering Drake with the gun, and dialled a number and talked in Venusian for about a minute. Then he hung up and faced Drake. "Take a couple of good long

drinks."

"What?"

"Now it's your ears that are foolish. You heard me. Take a good long drink from that bottle. When you're found here you'll be locked up as a drunk. The cadet's body will be gone; I've arranged for that. The 311 will be in the void by then, and anything you care to tell the authorities will sound like the ravings of an alcoholic. So start drinking."

Drake glanced at the gun, saw that it was steady as a rock in Riley's hand. He picked up the bottle, took a long swig of the burning liquor. "To the Fleet," he said.

"To the Fleet!" Riley said mockingly. "Now turn around. I'm going to sprinkle a bit of this poison on your clothes."

Drake turned around. He heard Riley move slightly, then a sudden whisper in the air, and then all hell exploded inside his head. He pitched forward to the floor, conscious only of the splitting ache in his skull and the darkness that was sweeping over him. . . .

HANDS TUGGED at him, pulled him over onto his back. A cool palm touched his forehead, and then what seemed hours later, a damp rag was pressed to his face.

Drake sat up, cursing the throbbing pain at the base of his skull, cursing himself, cursing the world. When he forced his eyes open he saw the girl, Vanya, kneeling beside him, an anxious expression on her pale features.

"You're all right?"

"Yes, I am all right. I'm fine." He caught her arm suddenly, and she winced. "What time is it?"

"Eight-thirty. What happened?"

Drake got stumblingly to his feet and poured himself a drink. There was still time. A full hour. "What hap-

pened?" He laughed and drank the hot liquor. "What are you doing here?"

"I told you I was sorry about what I did. I came to see if I could help you in any way. I found you on the floor."

"With the rest of the garbage," Drake said. He looked down at the girl with distaste. "Get up on your feet. And stop staring at me like a wounded cat."

"I cannot help the way I look," she said, rising.

"Oh, skip it, for God's sake." He looked down at his drink-spattered uniform, the uniform he had no right to be wearing. If you mind a man dressing in front of you, you'd better clear out."

"I've got you into great trouble, haven't I?"

"No, I got myself into it. And I'll get myself out of it. I joined up with the Venusian team to keep an Earth space ship, the 311, from getting to Saturn on time. I moved a computing arm on the master chart, because I knew that would send them hours off their schedule, and I knew that because I'm a damn bright boy who'll sell anything he's got for enough money." He stared at her with hard angry eyes as he ripped the uniform off and began putting on his civilian clothes. "But I ran into a fellow who's even brighter and who'll sell out even faster than I will. A bright young man named Riley, a captain on the 311. But I'll settle young Riley's deal for him. He shot a nice young cadet, who wasn't a bright boy and wouldn't sell out at the first sniff of a dirty dollar. Boy named Merriweather. Dumb, honest, trying to do his job. A sucker. So Riley shot a hole in him and tried to knock one in me. But he didn't make it."

Drake was talking himself into a hot rage, and the words were tumbling

out in a torrent. Slamming out the door, he started down the steps two at a time. He heard the girl coming after him, heard her call, "Wait!" But he kept going, as if the clatter of her high heels on the bare steps was the sound of a legion of devils.

Buttoning his coat he went out into the dark misty night. There was a light rain falling, a cold misting rain. Drake stepped to the curb to wave down a cab. Only then did he become conscious of the three men who were standing behind him in a semi-circle. He turned slowly and saw Arish's bland yellow face gleaming at him through the misting rain.

"We are armed, of course, and we're quite ready to shoot if you behave foolishly."

DRAKE FELT a sickening numbness creeping through him. Where were his brains? Where was his common sense? He should have known they wouldn't let him undo his filthy work now. Across Arish's head he saw the girl, Vanya, framed in the luminous radiance that streamed out from the hotel lobby. She turned her face from him and walked quickly away, and almost instantly her slim body was lost in the fog. Arish glanced over his own shoulder, following Drake's gaze, but the girl had already disappeared.

A car slid to the curb behind Drake and a door opened.

"Get in," Arish said. "We will—ah—have a little conversation until the 311 has departed on its errant course."

Drake sighed and climbed into the large car. Riley and Arish and Vanya—all out for what they could get, playing anybody for anything—what the hell was the use of feeling dirty about his own part in the business? He wasn't any worse than the rest of these rats.

Arish sat beside him, with one Venusian sitting on a small seat in the tonneau, and the other in front with the driver. They rolled off soundlessly into the dirty yellow weather. In forty-five minutes the 311 would be gone. And that was that. Who could he tell his story to? Who would listen to a dishonored renegade? Even if Arish let him go, there would be no chance of contacting the 311 until it was too late.

They drove for thirty minutes toward the outskirts of the sprawling city. Drake sat huddled in the corner of the car, a cigarette in his mouth, ignoring Arish's attempts at ridicule and humor.

"I think we shall now drive to the space port," Arish said, and leaning forward, he gave a command to the driver. "I think it will be most pleasant to watch the 311 leave. Don't you—ah—Commander Drake?"

The car turned about and five minutes later pulled to a stop before the massive gates of the space port. Arish glanced at his watch. "Just a matter of minutes," he murmured. He studied his watch as if it were the most important thing in the world. "Two minutes and ten seconds to be precise."

Drake rubbed his forehead.

Time passed.

An explosion shattered the silence, and from his window Drake saw the gleaming slender length of the 311 slash across the darkness, its rear rockets trailing plumes of fiery sparks; its passage through the atmosphere sending a cannonading echo through the night. It was on its way, curving away from the pull of Earth and driving with light-like speed toward the great planet of Saturn. And on the wrong course.

"Ah, well done," Arish said. He reached over and opened the door. "Good night, Mr. Drake. This has

been a very profitable association. We will call you when we need you again."

"And you think I'll come?"

"Of course. A man in your position is like a hungry dog. He answers any whistle."

Drake stepped out of the car into the wet night. The door slammed, he heard Arish's laugh, and then the car roared away in the darkness.

DRAKE STOOD a moment, feeling the rain on his face, and then he walked tiredly toward the gates of the space port. He didn't know where he was going. He had no object in mind. He was just walking.

Then he saw her walking swiftly in the compound beyond the space port's gates, her coat pulled tightly about her slim figure and leaning slightly into the wind and rain.

The sentry stopped her, and she showed him a piece of paper. He nodded and she moved past him into the street. Drake approached her and she looked up, recognizing him with a start.

"What's the game?" he said.

"I remembered everything you said," she said, speaking breathlessly. Her face was turned up to him and he saw the raindrops on her dark lashes and the excitement in her eyes. "I remembered it all, about the computing arm and Riley and the cadet, Merriweather. And even the ship, the 311. I came here as fast as I could from the hotel and told my story, first to the guard and then to the commander of the 311. I told him I overheard some men talking about it in a bar. They arrested the man named Riley, but he ran and they shot him. They say he will die."

"They changed the chart then?" Drake said.

"They said my story was true after they looked at it. And they said they

would change it before blasting-off."

"And they let you go?"

"They thanked me and let me go."

Drake took her arm gently and they walked along the silent street together, their slow footsteps sounding hollowly in the clammy night.

"It's like a miracle," Drake said softly. "All the treachery, all the evil, all the cunning that went into their plans. And it didn't do a bit of good. It's like a miracle."

The girl was silent.

"It makes me think there's a chance after all," Drake said, suddenly laughing.

"A chance for what?"

"I'll be damned if I know," he

said. "Just a chance. Vanya, may I buy you a drink?"

"Yes, if you like."

"There's just one thing." Drake stopped and pulled the wad of Venetian money from his pocket. The money he'd got from Arish. He removed one bill, and then, with a savagely joyful gesture he ripped the money into bits and threw it to the greedy hands of the wind. He put the bill he had saved back in his pocket.

"It's only right that they buy this drink," he said.

He took Vanya's arm again and they walked swiftly toward a cluster of lights at the end of the street.

THE END

HEART OF STEEL

By WALT CRAIN

PRACTICALLY every advancement made in modern science is due to the humble efforts of technicians. For every pencil and paper theorist (who has a very important role nevertheless), there are a thousand technicians and hand workers whose product contributes directly to the advancement of industry, science or medicine in some way. Instrumentation is the keynote of modern living. Perhaps this is more true in medicine than in any other branch of science, particularly now. Ever since the doctors discovered that a copper blade cuts better than a piece of flint, medical apparatus has been growing more complex.

No better illustration of the miracle of modern instrumentation can be found than in the new mechanical heart—one of the many being made all over the world—which has just been announced by Dr. Bailey, a heart surgeon at the Hahnemann Hospital in Philadelphia. This piece of wizardry is a strange blend of motors, relays, tubes and pumps, set in a console-like cabinet, and with its aid, a man may live who would certainly have died before. That is, we hope he will live. So far, the machine has not been used on human beings. Only animals have submitted to its ministrations.

The incredible part about the mechanism is that the machine can by-pass the entire heart and lung system of the creature to whom it is connected! This means that a surgeon may operate with perfect ease on heart or lungs, something that has always been an almost insoluble problem. The machine takes the blood, aerates it,

watches the carbon dioxide concentration, and then feeds it back through the complex network of arteries and blood-vessels.

In experimental work done with the instrument, a dog was kept alive by the machine for more than seventy minutes while the heart was inactive. Then the heart was connected back in the stream and took over its normal function, none the worse for the wear.

What makes this tool so important is this simple fact: In an operation, very often the human heart is unable to stand the strain. The result is that it stops. If it stops only momentarily, it still unnerves the surgeon for he knows the danger. If the heart remains stopped for any length of time—say a few minutes—irreparable damage may be done to the brain tissues. They are particularly sensitive to the lack of blood even in such short periods.

The mechanical heart obviates this possibility. At all times, the surgeon is assured that his patient's "heart" will not cease functioning no matter what happens. In addition, the mechanical heart is powerful enough to maintain normal blood pressure, a factor which often drops during the course of a strenuous operation. This alone is a miraculous boon.

Eventually, the mechanical heart will be made even more fool-proof. Perhaps in multiple units, so that should there be any sort of mechanical or electrical failure, there will be no danger. As it is now, a surgeon would rather reply on such a remote risk than the omnipresent fear that the actual organ will stop beating.

HE CAUGHT A MESON!

By
CONRAD KYLE

THE NOBEL PRIZE for 1950 was awarded to the British physicist Powell for his work in devising apparatus for detecting mesons. To one unfamiliar with physics, or even to one with some knowledge of the subject, this might seem like a peculiar choice. Why for the meson?

An examination of the truly fundamental work of physics as distinguished from the practical applied work on atomic bombs, and similar work, makes it clear that meson study is probably the most important present single phenomenon of the field. That is why Powell received the Prize. Primarily, his work entailed the development of photographic emulsions and plates which are capable of capturing these short-lived particles and fixing their traces permanently in silver bromide. While to some this might appear only as a matter of improved instrumentation, one "in the know" recognizes that after all, that is what physics really amounts to, improved instrumentation.

The meson is a peculiar sub-atomic particle. Actually, you can't say meson—it must be "mesons" for these particles vary widely in basic properties. They have anywhere up to two hundred times the mass of the electron, and they may have either positive or negative electrical charge equal to the electron. They appear first wherever cosmic rays deliver their bursts and, secondly, almost always when atomic reactions take place. But that isn't what makes them unique and singular.

The unusual part about the meson is that its life is measured in fractional millionths of a second. The difficulty of studying something like that is readily apparent. The important thing is to capture the trace, and that is what Powell has succeeded in doing. Thus thrusting into the hands of physicists one of their most powerful weapons for the study of the universe.

The Nobel Prize in chemistry, it is interesting to note, was awarded to two German chemists whose work, while not as theoretical and as airy as the meson study, nevertheless is basically theoretical. It concerns theoretical developments in the study of organic chemistry which led to the extremely practical work of creating synthetic rubbers, and many other chemicals. The technique is called the Diels-Alder reaction after the recipients of the Prize. It is primarily concerned with elusive "atomic-bond" chemistry.

An examination of the Prizes given in the sciences reveals that almost always they are given for highly subtle advancements resting squarely on hypothesis and theory with some hold on instrumentation. Rarely is any out and out invention rewarded by the Nobel Prize, because it was designed to recognize those advances which are really most important to human progress and, as it turns out, these advances almost always are highly theoretical and hypothetical. Science is an airy subject, with strong roots in fantasy!

AS SIMPLE AS THAT!

By
MILTON MATTHEW

WE REITERATE the fact so often that there is nothing new under the sun! But there are unusual ways of looking at things, and occasionally some genius comes up with one. Anyone who has the slightest interest in machinery (and what American hasn't?) is familiar with the age-old problem of fastening two things together. In connecting together two shafts of different diameters, or in fastening a gear to a shaft, or in putting two holes together one above the other, all kinds of keys, dowels, and tapered pins have been used. Bolts and cap-screws too, are common for this purpose. In most cases, however they're not perfectly satisfactory because they can't be removed easily, they gradually loosen, and in general are not quite the thing.

Now however, use is being made on a large scale of an idea taken back in forty-two or three, from a number of pieces of captured German equipment. Parts such as have been mentioned were pinned to-

gether with what is called a "Rollpin." This is nothing more than a metal tube with a slot down one side. It is made a little larger than the holes to be pinned and then is driven into place with the tan of a hammer. Presto! Your parts are firmly locked together, have no chance of wriggling free, and yet can be disconnected with another hammer tap!

The miraculous part of the thing seems to be, not the invention itself, but the strange fact that it wasn't thought of long ago! It seems to be so practical and so obvious, that you would think that someone surely would have invented it fifty years ago instead of it's coming up so late.

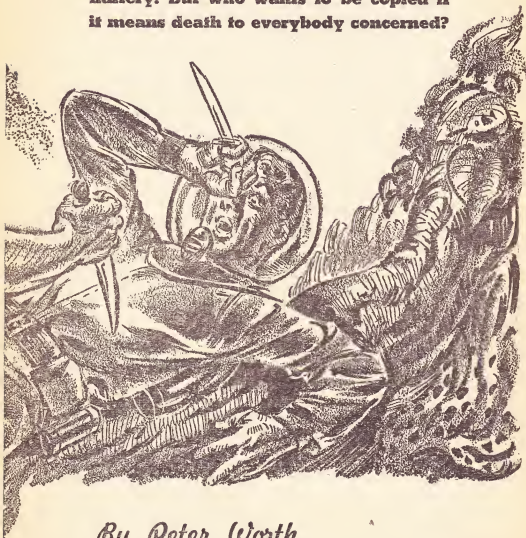
Keep your eye peeled for these "Rollpins." Particularly watch the next gadgetry or tooling that you buy. Automotive and aircraft equipment will undoubtedly make wide use of it also. Yes there is something new under the sun!—even if you have to reach pretty far for it!



Not until the knife reached for his heart did he realize the enormity of his mistake

THE IMITATORS

Imitation may be the sincerest form of flattery. But who wants to be copied if it means death to everybody concerned?



By Peter Worth

ALMOST abruptly, the ship dropped below the cloud layer. Less than a thousand feet below, the Andronian jungle was slipping past, queerly colored as though

lit by sodium vapor lamps, vividly detailed, yet somehow nightmarishly obscured.

Dick Farol felt the forward drag against his body as the ship's wings

crept out and bit into the ammonia saturated air. A mechanical screaming sound penetrated the ship and died down as the ship passed through a harmonic speed in its deceleration.

Then, a jerk brought his attention to the giant flattened ovoid of glass less than a mile ahead. The white splotches of the jungle were barely moving now. The ship seemed to be hovering, settling slowly.

Now, the transparent bubble, seen across an expanse of smooth, concrete tarmac, looked like a streamlined hothouse. Off to the right and the left, the jungle came up to the concrete. Monstrous trees spread evilly glistening branches upward in serpentine suggestiveness. Huge deathly pale leaves hung in drugged listlessness from bare limbs like unhallowed fruit.

Vividly unreal, a solitary dewdrop glistened on the ground at the edge of the runway, a yard high and slightly wider, curving under where it touched the soil like a drop of moisture on a dusty surface. Dick was startled at its resemblance to the ovoid dome. He watched it until the ship had nested its nose in the lock. Though he had never before been to Andron, he, as well as every living person in the solar system, knew what that gigantic dewdrop was—a jellymonster! The only other intelligent form of life in the solar system.

The center view screen, blank now that the ship's nose was in the lock, flashed instructions for getting free from the crash seat. Eager to get off the ship, Dick Farol complied. When the bulky front half of the cushion swung around, he stood up and stepped out of his compartment into the narrow corridor.

He knocked on the door to the compartment directly across from his. It opened and Gerry Holmes' cheery smile flashed at him. They started

toward the front of the ship, their progress slowed more with each step as other passengers emerged into the narrow space ahead of them.

"We're here," Gerry whispered excitedly. "I wonder how it will feel to set foot on another planet."

"Not any different," Dick said. "Andron gravity is only ten per cent less than that of Earth. Did you see the jellymonster at the right edge of the landing strip, Gerry?"

"Yes," she said. "Wasn't it strange? But of course it wasn't really. It's just like the color pictures of it. I can hardly wait to get off. I haven't seen Dad for seven years."

THEY WERE crowded against each other. The line had stopped moving, and people still coming out from compartments packed the corridor. Gerry's blue eyes looked up at Dick, twinkling with the excitement of arrival.

"Wish they'd get moving," Dick growled good naturedly. As if in answer, the line started forward slowly. He slipped his arm around Gerry's waist unobtrusively. She turned her head up and smiled again.

The narrow corridor ended, to be replaced by a broad platform. People were milling about. Gerry's eyes searched swiftly, lighting up when they spotted her father at the edge of the waiting crowd. She seized Dick's hand, waved excitedly to her father, and started through the hurrying crowd toward him, dragging Dick behind her.

Dick felt her fingers leave his as she reached her father and flung her arms around him. He let his eyes roam, taking in the immensity of space underneath the dome that held back the ammonia-tainted Andronian atmosphere like that of Earth. Extending in regularly spaced rows like trees in an orchard were the stanchions that held

up the glass roof a hundred feet overhead.

There were buildings; surprisingly few. A half dozen five-story buildings and numerous houses that were exactly like their counterparts on Earth with smooth lawns and shrubs and trees. Dick nodded his head in satisfaction as he surveyed these. They were to give a normal mode of living necessary to the people who lived here so far from civilization.

"Dad, this is Dick Farol," Gerry's voice interrupted Dick's exploration.

"How do you do, sir," he said, taking the proffered hand and shaking it briefly.

"So you're the young engineer that Mr. Overman said he'd send," Mr. Holmes said. "Well, you look intelligent. Glad to meet you."

"Yes, sir," Dick said. "Gerry told me a great deal about you on the trip. I was certainly surprised to learn that you were her father. We got acquainted just before the ship started. Opposite compartments."

"I bumped into him," Gerry said, laughing.

"Well, let's go," Mr. Holmes said. "I'm turning my room at the hotel over to you, Dick. With Gerry here, I rate a house. Your baggage will be sent over to your room. We don't have to bother about any of that."

HE LED the way down the steps off the platform that served the purpose of a depot without the necessity of a roof over it in the dome-protected city. Instead of streets with sidewalks and curbs, there were only ten-foot sidewalks. The dome city was too small to necessitate wheeled transportation.

Smoothly mown carpets of green grass grew everywhere that there was open space. Ornamental shrubs and trees dotted the lawns. Flower beds provided color. It was a picture of

spring, an island of Earth culture far removed from the Andronian jungles that surrounded it and their moisture-saturated, ammonia-tainted atmosphere that could paralyze a man's lungs with acrid fumes and leave him a gasping, tortured invalid.

"You've changed a lot, Dad," Gerry said affectionately. "Your hair's snow white now. Your face is a lot thinner. I don't think life on Andron is doing you any good."

"You've changed, too," Mr. Holmes said. "The last time I saw you, you were a thirteen-year-old kid with pig-tails. Sophisticated as all get out. Now, you're as fine a woman as your mother was." He cleared his throat noisily. "There's the hotel over there, Dick," he pointed, changing the subject quickly. "Our house is just a couple of blocks past it. Might as well come along with us and learn where it is. Not that it'll do you much good, mind you. I've talked so much about my daughter around here that every single man in the station is in love with her."

"And the married ones, too, no doubt," Gerry smiled. "How disappointing. I'll be stuck with Dick. Every eligible man except him in love with an old man's dream!"

The three of them laughed heartily, Gerry in the middle as they strolled along, her arms hooked in those of her father and Dick Farol.

Dick studied Gerry and her father together. There was only a faint resemblance—the same firm chin, hardly more than that.

Mr. Holmes' laugh died suddenly. "Yes," he said softly. "An old man's dream. You are that, Gerry. You are your mother over again. Well, here we are. This is the house."

He hastily stepped forward and led the way up the walk to the small front porch of the one-story cottage resplendent in a fresh coat of white

paint. It might have been on some quiet street in a small suburban town back on Earth, instead of on another planet.

Gerry's eyes met Dick's briefly. For just a moment, her lips trembled. Then she caught up with her father, laughing gayly as she went past him to be the first to enter the house.

THE PHONE awakened Dick. He opened his eyes and reached for it at the same time, fully awake and fully coordinated. "Yes?" he said briefly.

"Mr. Farol?" a voice asked. At his repeated yes, the voice continued: "This is Blake. J. B. assigned me to keep an eye on you. You're doing OK so far. Keep it up. You make your reports through me. The number is 217. Any questions?"

"None," Dick said tonelessly. "I make my reports through Blake by phone—217. OK."

"And, Farol," Blake's voice said, "don't forget how much is at stake in this. I was right behind you getting off the ship yesterday. You're doing fine. Just don't lose your judgment."

"What do you mean?" Dick asked. A click at the other end was his answer. He shrugged and replaced the receiver.

It rang again ten minutes later when he was under the shower. He dripped across the rug to answer it.

"Hello, Dick." It was Gerry. "Are you awake yet?"

"Just taking a shower, Gerry," he said cheerfully.

"Well, hurry it up and come over for breakfast," she ordered.

"Don't tell me you can cook," he mocked playfully.

"I'll let you in on a little secret," Gerry whispered over the wire. "It's the first meal I ever cooked on this planet."

"Don't tell me it's fried jellymonster

on Leper tree leaves," he whispered back. "I'm not that hungry."

"Oh, but it is," Gerry replied. "And you'll love it the way I cook it."

Dick chuckled. "Be over in half an hour."

It was twenty minutes, though. And the breakfast was tomato juice, cold cereal, toast and coffee. Finally there was nothing left but coffee. Dick lit himself a cigaret. He kept his eyes on its gleaming end.

"Mr. Holmes," he said slowly. "You're the greatest living authority on the jellymonsters." He flashed Gerry a quick smile. "How about telling me something about them. I've read the books on them, including yours. We saw one outside as the ship was landing. That's the first real one I've seen."

"If you've read my book on them," Mr. Holmes said, "there's little I could add to it."

"Oh, but there is, sir," Dick protested. "When I read your book, I had the feeling that you were holding back more than you told."

"You did?" Mr. Holmes said mildly.

"Frankly," Dick said, "I jumped at the chance to come here to Andron and meet you. The jellymonsters are millions of years old and far more intelligent than a human. Their philosophical conceptions must be far in advance of our own. They must know secrets of nature that man hasn't dreamed of."

"They do," Mr. Holmes said humbly.

WHAT ABOUT their physical structure?" Dick switched the approach. "The books, including yours, all say, 'It is commonly agreed' this and that. And it all seems a little fantastic. I can't conceive of an intel-

ligence as a functioning of a cell mass that can operate through any and every cell in the organism and make it act as a nerve cell, a muscle cell, or whatever it wants to. Yet, that is what 'it is commonly agreed' is the case."

"It is, though," Mr. Holmes said. "The jellymonster is a mass of transparent cells contained by a transparent skin. It can form any part of its skin into a lens surface and cause the cells in the focal plane of that lens to become a retina. It can make those same cells receptive to sound. It can make those same cells behave as muscle tissue, and can mold its mass into almost any shape."

"But how?" Dick persisted. "Why don't the various receptivities get mixed up? How can it distinguish between sound and light if the same cells are activated by both?"

"That I don't know, nor does anyone else," Mr. Holmes said. "I think there's some master pattern to all things, and they transform all thought into that master pattern, like the logician reduces all reasoning to logic patterns."

He took a sip of coffee and continued: "I can tell you this much that isn't in the books," he said. "The reason a jellymonster will work in the mines and the power plants and provide us with U-305 even though they know we tricked them into committing themselves to it, is because they are unable to break their word. We tricked them. They were curious about us. We offered to teach them everything we know, in return for U-305. We agreed to provide the most modern equipment almost fully automatic, and take nothing from their planet except the U-305 which they were to bring us in twenty pound spools of number sixty bare wire, ready for feeding into the rocket chambers of our ships.

"We didn't tell them that there were

to be hundreds of ships, and that we would require eventually five hundred pounds of U-305 a year. We didn't tell them that eventually they would have to mine thirty-two thousand tons of ore every twenty-four hours, and a hundred thousand tons of coal during that same time to feed to the automatic machinery to get out the U-305. They agreed to produce as much as we had need for.

"They didn't squawk though. They set themselves to the problem of improving on our methods. They remembered or discovered, I don't know which, the principle of converting the heat contained in the atmosphere into work. That eliminated the coal. It cut out two-thirds of their work.

"**A**ND WHAT happened? J. B. Overman wants to find out how they did it so he can patent the process and corner power production on Earth."

"But don't you see," Dick said, "what a boon to mankind that would be? There's only enough coal left on Earth to last another fifty years. If we could use that process, it would cut down coal consumption ninety per cent!"

"I know," Mr. Holmes said. "But we agreed never to ask any of their secrets."

"You talk as if the jellymonsters were human," Dick said with a dry chuckle.

"Human?" Mr. Holmes echoed. "No. They are—Gerry, pour Dick some more coffee."

"No, thanks," Dick said. "The jellymonsters are what, Mr. Holmes?"

"No one knows, really." Mr. Holmes dismissed the subject with a frown.

"I believe I will have another cup," Dick said, to ease the situation. He was silent while Gerry poured it. He

took his time with the sugar and cream. He lit another cigarette.

"It's such a strange thing," Dick began in a casual, almost disinterested tone. "Here's a whole planet with practically only one form of life that can move about—and it's almost exactly like one of the protozoa. Only it never divides, and is highly intelligent. Also, there is practically only one form of vegetable life, the Leper tree. And it so happens that the jellymonster lives exclusively on the leaves of the Leper tree. Certainly there must have been a time when there were hundreds of thousands of different life forms. Where did they go?"

"And what about the jellymonsters? They seem to be entirely passive and peaceful—but could they kill a man if they wanted to? I've wondered about that. It seems almost unbelievable that man could land on this planet and establish dozens of footholds and not have friction with the natives sometime."

"The disappearance of all other land life is easily explained," Mr. Holmes said. "The Leper tree gives off huge quantities of ammonia gas, and if it were a mutation that appeared late, it could have destroyed all other life in that way alone. The jellymonster survived because it either is unaffected by the ammonia or uses it; there's no way of finding out. As for one of them killing a man, I don't think so; but there are worse things than death. I only hope this business of the power plants doesn't lead to any hostile act against the jellymonsters. If that happened, I'm afraid it might mean the end of all life on Andron!"

"You mean us?" Dick asked.

"I mean us and the jellymonsters and the Leper trees," Mr. Holmes said. There was a strained tiredness over him now. He seemed suddenly an old and broken man.

"You don't like the idea of my vis-

iting one of the power plants and trying my hand at figuring it out?" Dick asked.

"Oh, I don't mind that," Mr. Holmes dismissed the suggestion with a vague wave of his hand. "Others have done it without success. If you can solve the problem, it will certainly relieve the situation. But you will fail like the others. And sooner or later, Overman is going to try strong arm methods to get it. He will find out then what I'm afraid to tell him now—and it will be too late to turn back."

"Stop carrying the weight of two worlds on your shoulders, Dad," Gerry said, giving Dick a pleading look as she stepped behind her father and rumbled his white hair. "It's a nice day out. Let's all go for a walk."

"It's always a nice day under the dome," Mr. Holmes chuckled. "But you're right. A walk would do us good."

DICK FAROL dialed two one seven. He heard the buzz of the other phone only once, cut short. Blake had evidently been right by his phone, waiting for the call.

"Farol," Dick identified himself. "He doesn't seem to have any ideas about the disappearance of Harper and Friedman. But he does know something about the jellymonsters he's not telling to anybody. He seems to feel that mankind had better not find out. He was too vague about things to pin down; but the gist of his remarks was that he believed the first hostile act against the jellymonsters would precipitate something that couldn't be stopped, and would wipe out all life on Andron. Humans, jellymonsters, and Leper trees."

"Keep working on it," Blake said. "Go ahead with the pretense of wanting to figure out how the jellymonsters can use the heat of the atmosphere to

run a turbine. Work into his confidence. Marry the girl if necessary. We're going to try something to bring a little psychological pressure on him. Don't worry about it when it gets started. Remember, we don't want to hurt him. He is one of our men. But we need information which he seems to feel must be withheld."

"What are you going to try?" Dick asked, his face and voice expressionless.

"Just a little bug to make him sick," Blake said. "There's a possibility he'll want to pass on what he knows—to you, if you work it right. For your information, it'll be the latest bubonic mutation—still top secret. Non-contagious, fatal if not stopped. The counter-agent can cure any time up to death. Of course, if it went that far it would take maybe a year to restore brain tissue to the point where the mind was normal again and in possession of all its memories."

"The hospital staff?" Dick asked.

"Prepared for it," Blake said. "Don't worry about a thing. Just be sure you do your job. You're putting on a good act. Keep it up."

"Maybe it isn't an act," Dick said softly.

"It better be," Blake said. "Don't go sentimental on us. But I don't think you will, Farol. Do you think you will?" The tone was mocking.

While Dick hesitated, there came the click of the other phone hanging up. He stood there holding the receiver, his eyes staring blankly into space. His face remained expressionless as he finally dropped the phone into its cradle and turned away.

"WHAT DO you know of this Dick Farol, Gerry?" Mr. Holmes asked, glancing up from a book he was reading. Gerry gave a last jab at the record catalogue board, then turned toward her father with a smile.

"Not much, really," she admitted. "I know that he isn't married. He hasn't ever been to Andron before. He mentioned having been to Mars. He's thoughtful in the little ways that count. He seems a trifle too serious about things, but I think that it may be just reticence, and that he'll get over it. He's taking this chance Mr. Overman gave him to try his luck on figuring out how the power plants run, very seriously. Now and then. I get flashes of hidden depths to him and a tremendous ambition or determination."

"You think you might care for him enough to marry him?" Mr. Holmes asked softly.

"Why, I—I don't—it would depend on whether he asks me, wouldn't it?"

Mr. Holmes chuckled and turned his attention to his book again.

"Dad," Gerry said hesitantly.

"Yes?" he said, glancing up.

"You will help Dick, won't you?" Gerry asked.

"If you mean, tell him what makes the turbine wheels go round without steam—no," he said. "I don't know myself. But then I'm not an engineer. Dick probably has a whole section of his brain finely engraved with entropy tables, log tables, and whatever tables an engineer has to know about."

While Mr. Holmes had been talking, a pained expression had appeared on his face.

"What's the matter, Dad?" Gerry asked in anxious alarm.

"Nothing," he said. "Just for a second I felt like I was burning up. It can't be anything serious. I haven't been sick for ten years."

Gerry laid her hand on his forehead. "No fever. Must be my cooking. It's time we were going to bed, anyway."

Mr. Holmes laid his book aside with a sigh of contentment and stood up. "It's a long time since there was any-

one around to tell me that," he said. "I suppose you're right. We want to be rested up so we can take a trip to the nearest power plant tomorrow."

"THE SUITS are designed for lightness," Mr. Holmes explained, pointing to the rows of transparent plastic clothing hanging by coat hangers from long rods. "Pick out what you think is your size and put it on."

He himself had taken one of the suits and was slipping it on over his clothes as he talked.

"The galoshes are in those bins along the wall," he went on. "The bottom of the coverall leg has a zipper edge, as you notice; and the top of the galosh has another. After you zip them together, you have to lay some tape over the zipper joint to make it air tight. That's very important, because with a lot of ammonia-free moisture on the skin inside the suit, the slightest leak will allow ammonia gas to go in, and when it gets in, it immediately dissolves in the moisture and causes a pressure drop that will suck more in."

He waited until Dick and Gerry had caught up with him and led the way through a door into another room.

"Here are the helmets," he said. The shelves that covered the walls held long rows of transparent spheres. "They're stiff, so they'll keep their shape and stay away from the face. They used to have them attached to the suit. Now, they're designed so there's a collar that seals off the head area from the body area. That way, if you rip the suit, the air you breathe isn't contaminated."

An attendant helped them put their helmets on. A light harness with four small tanks, two in front and two in back, completed the outfit. Two small hoses from the tanks fastened under the chin where plastic inlet pipes were located in the helmet.

"The atmospheric pressure of Andronian air is about fifteen, the same as on Earth," Mr. Holmes continued. "Theoretically, it shouldn't be, but with so much ammonia gas, the density is higher—hence, the high pressure. Now, we're ready to step into the lock."

Gerry and Dick followed him in. The attendant closed the door to the lock, which was no more than a small room bare of furniture. Immediately, Mr. Holmes opened the door opposite and they stepped through. Above them, the unbroken cloud ceiling hung free, unobscured by any intervening shield of transparency.

A hundred yards to the right along the vertical wall of thick glass, one of the sleek Andron-run space ships rested on its twenty-four huge wheels with its wing that was visible pointing toward them. A half dozen bumps in the wing were the jet motors for use in take-off and flight up to the stratosphere where the rockets could be safely used.

BUT NEITHER Dick nor Gerry were interested in the ship. They had seen similar ships many times on Earth. Compared to the huge Martian liners, these were pigmies.

Gerry's father led the way along a well worn path that went into the native jungle away from the concrete landing strip. There was no such thing as soil or dirt in the usual sense, nor was there any form of vegetation other than the gigantic Leper trees. The trunks of these trees were six to ten feet at the base, irregularly round, and with a warty bark surface, brown, with a leprous white spotting it, and here and there forming a large patch that hung away, exposing pithy fibre underneath.

Overhead branches spread out profusely. Gigantic inch-thick leaves hung straight down on spindly stems,

dead white and flat. They were far apart and gave the impression somehow of the fall of the year when few leaves are left.

The ground was springy, and both Gerry and Dick had difficulty at first in walking, until Mr. Holmes showed them how to walk with their knees slightly bent.

A gloom hung everywhere, and a silence that seemed to presage a thunder storm. What light there was seemed to spring from the leprous whiteness of the leaves and blotches on the bark of the trees.

And everywhere was the slow drip drip of moisture. It dripped on the plastic helmets and spread out like oil. It coated the flexible plastic of the coverall garment and lubricated it so that it rubbed with silent slipperiness.

Yet nowhere was there a pool of water. The pithy ground drank up the dripping moisture instantly and was still hardly damp. It was like a thick bed of rotted sawdust or damp peat, and actually it was peat in its first stages.

"About fifty feet under us," Mr. Holmes said, "the coal beds begin. There's coal underneath all this. Just above it is peat, which tapers off after about twenty feet. From there on up is only the loose stuff. That's why it's so springy."

Immediately after, they came upon a jellymonster.

"Oh! Isn't it beautiful!" Gerry exclaimed. Dick nodded his head grudgingly.

It was perhaps two feet thick and a yard across at its thickest, a flattened sphere of iridescence, colorless and with a deeply refractive transparency.

"Hello, Mr. Holmes," it said. Its upper surface blurred slightly from the vibrations as it spoke. "I see your daughter has arrived."

"Yes," Mr. Holmes said. "And this young man is Dick Farol, an engineer who has ambitions. He wants to try his hand at figuring out the principle of utilizing atmospheric heat to run a power plant."

THE REFRACTION patterns within the jellymonster shifted slowly. A four inch circle bulged out slightly.

"Glad to make your acquaintance, Dick Farol," the jellymonster said. It was obvious that it had formed an eye and was looking more closely at him. Its voice was warm and human-sounding, masculine in tone.

The small bulge crept a few inches and centered on Gerry.

"Your daughter looks very much like you, Mr. Holmes," it said. "We've all regretted that we were never able to see your wife. Is your daughter much like her?"

"Almost exactly like her," Mr. Holmes said. "I would never have believed it until I saw her. She's Alma all over again except that she has my chin."

Dick and Gerry were staring at the jellymonster with wide eyes. The reality was far different than what either of them had imagined. It was like being confronted with a strangely bizarre plastic loud speaker, except that there was something deep within the thing that was unmistakably sentient and alive. Perhaps it was only the refractive patterns. There seemed no structure to the thing, only transparency and rich refractiveness like that in a diamond.

The surface of the ground on which it rested seemed to rise up in a hump inside it. An inverted hollow effect. In the center of that dark hump was the vague outline of a half eaten leaf, white against the dark of the peat soil, enriched in color through the transparent mass of the jelly-

monster.

"Would you like to come with us?" Mr. Holmes asked.

Instead of answering, the jellymonster began to rapidly change shape. While Dick and Gerry stared in dazed stupefaction it changed into a transparent man-shaped thing. It did it with the rapid ease of long practice.

While it was still changing, it chuckled absently, like a man getting into his shirt, and said, "It's obvious your daughter and the young engineer have never seen one of us before, Mr. Holmes."

The change was complete. The jellymonster immediately started walking. Dick noticed that its shape was not exactly that of a man, but of the plastic outer garment they each wore. Its feet were like the galoshes they wore. Its head was a sphere instead of having human features. Its arms were simple pseudopodia swinging as it walked to preserve the walking rhythm. Its legs didn't bend at the knees, but curved through their whole length.

"I haven't had a walk since the last time I walked with you, Mr. Holmes," it said, the top of its spherical dome head vibrating.

UNCONSCIOUSLY, Dick and Gerry had moved to each other's side. Dick felt her bump against him slightly and reached for her hand. They looked at each other with stunned blankness still on their faces, and followed along behind Mr. Holmes and the walking jellymonster.

They kept their eyes on the thing. Leper trees, brooding sky, and even reflections of themselves played strange games of fantasy with one another in the refractive structure of the moving figure.

It was called a jellymonster—named

by the first explorers to reach Andron before it was known that the things could move. Yet, there was not the slightest jellylike quiver of uncontrolled motion in it. Every slightest move of every part was purposive and efficient, from the carelessly graceful movement of its leg pseudopodia to the blurred vibration of the top of its spherical head as it chatted with Mr. Holmes.

Dick estimated that it was at least four miles before they came to a slight dip that marked the edge of the forest and the beginning of the stone outcropping. He recalled it as it had been from the air—a long, snakelike ridge. It lifted out of the springy jungle ground. For a width of two yards, there was a trace of real dirt where the erosion had washed down and collected against the filter of peat.

Gerry's father and the jellymonster started up a diagonal path cut in the rock. Half a mile away was a large building with six tall stacks regularly spaced along its length. It was a typical steam power station.

The rock formation was a crystalline granite glistening wetly. Dick stopped briefly and examined it closer. Instead of wearing away smoothly, it was separating into small crystals that in time would wash down on the side of the slope.

After the four mile hike through the springy jungle, it was obvious why the power plant was built here on this solid rock outcropping. Dick turned his attention to the power house. There was no trace of smoke from any of the stacks. A short distance down the slope from the building a great cloud of white vapor boiled. Around it the rocky slope glistened whitely.

As they drew nearer, the temperature grew colder. There was a slight breeze that snatched at the billow-

ing white vapor and tried to carry it away. It quickly dissolved into nothingness.

The whiteness was ice! And as they paused at its edge they could see the outline of a large opening, the regular outline of a shaft that emerged from the bedrock.

"This is the air outlet," Mr. Holmes explained to Dick. "The condensation comes from the cold air striking the warm air out here. The cold air already lost its moisture inside. The condensate runs off through a drain pipe just outside the wall of the plant. The warm air enters through the stacks. Just the reverse of the flow in a coal fired furnace."

"I know," Dick said. "I read all the reports on it and all the theories expounded by engineers who have studied the problem."

"Then you can avoid the errors of your predecessors," the jellymonster said. They were continuing up toward the building as they talked.

THEY WALKED along the wall of the building, paused where the drain pipe stuck out, a steady stream of clear water pouring from it to cascade down the slope toward the wall of the jungle, and continued on to the end of the building where there was a door.

The jellymonster opened the door, its right pseudopodium of an arm reaching toward it and growing fingers with which to grasp the knob with as calm an assurance as a human might strike a match. The door opened inward.

The six turbo-generators squatted on the rectangular expanse of smooth concrete floor. The interior of the building stretched upward to steel roof arches. The boiler bank loomed as a giant wall. It was familiar—familiar with the heart tugging hominess that comes from years spent in the

surroundings of such a plant.

Dick's eyes wandered slowly, hungrily, over every detail. His ears listened, interpreting every sound, analyzing it with a skill that can take the noise of a dozen machines running at once and pick out the one with a loose con rod or other fault, unerringly.

He breathed deeply and frowned in annoyance at the recollection that he could never smell the oil and steam smells of this place because of the poisonous atmosphere.

Without reading the nameplates, he knew the make and model of the turbo-generators. Everything here had been made on Earth and transported across space.

He forgot Gerry and Mr. Holmes, and the jellymonster. He stepped slowly forward. He laid a hand against the side of a turbine. He walked past a control panel. He went down steel steps to the region below. He saw the frost coated condensers. He saw the automatic coal stokers pulled out of the way, and the sheet silver air shaft that ran along the boiler fronts with side ducts entering the fire doors. He put an eye to a peephole and saw only blackness in the furnace where there should have been blinding heat.

He went back above and re-examined the turbo-generator units, looking for signs of damaged sheet metal screws where the casings might have been taken off. His fingers touched the units again and explored the meanings of the vibrations they sensed.

He went to each of the units—the three in operation and the three that were idle. And when he returned to the door where the jellymonster, Mr. Holmes, and Gerry waited for him, his face was expressionless.

THEY WENT down the rock slope to the Leper trees. They walked

perhaps a mile back the way they had come. Gerry looked at Dick closely from time to time, but didn't say anything. She was content that her hand was in his as they walked along, side by side.

There was a small bulge in the spherical head of the jellymonster. It slid over the surface, ahead, to the side, around to the back, visible as a small bulge when it was to the side, only a small circle of refractive pattern at other places. It was an eye. More than once it studied Dick. He seemed not to notice.

"Well," the jellymonster broke the long silence. "I think I'll stop here."

One of his arm pseudopodium reached up, thinning as it extended, and wrapped around the stem of a leaf ten feet overhead. It jerked with a side twist. The leaf came free. The pseudopodium laid the leaf on the ground. Then the whole jellymonster drew in on itself and settled over the leaf. In a minute it was again a giant, glistening dew drop.

"It was nice of you to come with us," Mr. Holmes said. "Gerry and Dick are still a little stunned. It does take a while to get used to you, you know."

"I know," the jellymonster chuckled. "It probably took me a while to get used to me, myself, long ago. I hope you found enough food for thought back there, Dick Farol. You and Gerry consider yourselves accepted. You will find one of us somewhere close wherever you go on Andron. We are all, as Mr. Holmes says, like peas in a pod. I'll be telling the others about our meeting, and describing you to them. The word will go along."

"Well, thanks," Dick said. "Sorry I wasn't more sociable."

"I'm glad I met you," Gerry said. "Now I know why Dad talks as though you were—" She stopped, confused and embarrassed.

"People," the jellymonster chuckled. "The workings of the mind are always a refreshing study. Don't be embarrassed, Miss Holmes."

"I—I think I'm going to think of you the same way Dad does," Gerry went on. "You are so human in your ways, even if those ways are so different from anything I've ever experienced."

"That goes for me, too," Dick said. "I'm sorry your environment has to be so different from anything we can stand ourselves. I'll bet it would really be fun to have you come to Earth with us and see everything there."

"It would be," the jellymonster said. "At one of the domes, as you may have heard, is a theater built just for us. It's a dome within a dome, with a movie screen. Many of us have been there and seen hundreds of newsreels and travelogues, so we have perhaps as comprehensive a grasp of things and sights on the Earth as you Earthlings."

THEY WENT a few hundred yards in silence. Suddenly, Mr. Holmes stopped and put his hand up to his transparent helmet. It bumped against it as if he had forgotten about it and was reaching for his head. The inside of the helmet frosted over slightly with a concealing dew.

"Dad! What is it?" Gerry was alarmed.

Her father swayed dizzily. "I don't know," he muttered. "I feel like I'm ... burning ... up."

"He felt that way just before going to bed yesterday," Gerry said in a low voice.

Dick caught Mr. Holmes just as he started to fall forward. "We'll have to get him to the hospital," he said. "I'll carry him."

He picked up the old man and found him surprisingly light. Then, he started walking rapidly, Gerry hover-

ing at his side anxiously.

"Funny—I can't see—fogged," Gerry's father gasped. "Hot—stuffy."

"Faster, Dick," Gerry whispered. "Oh, why didn't I make him get a checkup this morning before we left."

Dick compressed his lips and said nothing. There was agony in his eyes.

"I wonder what it is?" Gerry asked thinly.

"Whatever it is," Dick said, "the doctors at the hospital can probably identify it and clear it up in a hurry."

"Do you think—" Mr. Holmes gasped. His breathing was loud and rasping. "You—will be able—to figure out—power?"

"Perhaps," Dick said reassuringly.

"That's good," Mr. Holmes breathed.

"Terrible worry. J. B. doesn't care—doesn't know awful truth."

"Awful truth?" Dick echoed. Drops of sweat stood out on his forehead.

Mr. Holmes' hand reached up and gripped Dick's shoulder fiercely. "Going to die," he said. "You love Gerry?"

Dick's eyes stared straight ahead. His face was a mask of mental agony. Gerry looked at him softly. "You aren't going to die." Dick's features forced themselves into a smile. "But—yes—I haven't told her. I love her." He kept his eyes ahead, avoiding Gerry's.

"Have to tell you," Mr. Holmes rasped. "Jellymonsters—ape—" His breathing wracked his whole body. His chest heaved up and down, working at breathing. The inside of his helmet was completely coated with steam. "Think—"

Suddenly, he was very still.

"**I** TELL you that's all he said," Dick said hotly. "He said 'Awful truth'. Then he gasped out three words, far apart. They were 'Jellymonsters', 'ape', and 'think'. Then he fainted. It's not my fault the whole thing misfired. I didn't like

it. Tell J. B. Overman he can send me back to that stinking hole on Mars. If I knew anything, I think I would keep it a secret—but I don't. I don't know a thing. Those three words can mean anything. They can be totally unconnected. They don't make any sense together."

"Take it easy, Dick," Blake soothed. He was sitting in an upholstered chair, his elbows resting on the chair arms, his fingers touching one another at the tips and fanned out. "Nobody's going to send you back. You've done your best. Just wrack your brains a little harder. The words themselves mean nothing, as you say. But you, and you alone, know every inflection and every little thing that might point to a meaning. Why don't you relax and stop worrying about it. After awhile, maybe you can make a good guess. OK?"

"OK." Dick groaned, rubbing the palm of his hand over his face. "You're sure Gerry's father will live?"

"Positive," Blake said. "Artificial organs, mechanical heart, God knows how many different hormones and things injected into the blood stream. The new technique even gets the fine blood vessels near the skin so the blood uncoagulates in them instead of leaving a blue lacework all over the skin like it used to. In a month, he'll be back to normal. Better than normal, actually, since his kidneys and heart will have a long rest. But—we can't wait a month! Dammit! Harper and Friedman are still missing out there someplace, dead by now. No trace of them. We've got to know what that awful secret is before we move a step."

His eyes softened imperceptibly. "J. B. can be a nice guy when he wants to," he added. "If you give with one thing that helps, you won't have to worry about the future. A

good job...Gerry..." He stood up and walked casually to the door of Dick's hotel room. His black eyes and thin smooth face were expressionless. "Just one thing. That's all," he said. Then he was gone.

Dick stopped his pacing and went to the window. His eyes were bleak. They looked up at the roof of the dome. Far above, the heavy cloud ceiling hung, unmoving. It never changed. The light of stars never penetrated to the surface. The sun, eight billion miles away, did little more than change a small circle of the dark cloud ceiling to a lighter color, almost unnoticeable.

FAR UNDERNEATH, in the heart of the planet, the natural atomic pile generated heat which drifted to the surface, was held in partially by the cloud blanket, then radiated off into space. It was that natural atomic pile that created the U-305 and shot it upward, so that most of the surface of the planet was peppered with it.

Or was it a natural pile? Several of the more prominent scientists still argued that such was impossible. There were books that tried to prove the whole Andronian planet was artificial, and that nothing about it had developed naturally. They tried to prove that the jellymonsters or their ancestors had built the planet. Built it about an artificial atomic pile whose components had been gathered by mining all the inner planets.

There were the long shafts in the solid rock crust of airless Pluto to back up the theory. Shafts whose walls showed traces of radio-active ore too thin to be worth working—pointing to the possibility of rich radio-active ore veins where the shafts were, in the past.

These things Dick Farol brought into memory, weighing them. Were they clues to the "awful truth"? Or

did they have any relation to it?

One thing was quite certain: The secret of using an ordinary water tube high pressure boiler, turbine, and condenser to change atmospheric heat into electric power had no relation to the "awful truth". Mr. Holmes had been quite willing for that secret to be discovered; had even hoped it would be, to relieve the tense situation that he believed might lead to an overt act masterminded by J. B. Overman.

But if the atomic pile in the heart of the planet were artificial and had been built by the jellymonsters, it was not only possible but probable that they had huge underground spaces in which might be concealed space ships and weapons far in advance of anything Earth could produce.

The words *ape* and *think* after the word jellymonster. Did they mean that some creature as far ahead of the jellymonster as the human was ahead of the ape, was in back of it? A super race living under the surface of Andron? That hardly seemed likely. Life was built on chemical action, not radio-activity. Radio-activity changed atoms. If atoms in organic compounds changed their identity, they wrecked the molecule they were a part of, and destroyed life.

No intelligent race would live under the surface of Andron and let itself be bombarded by radio-active particles. That didn't mean there couldn't be storage caverns for weapons, though. Was that the "awful truth"?

Dick shook his head. It was all he could think of, but somehow it didn't fit the picture. It didn't fit in with the way Mr. Holmes felt about the jellymonsters.

A look of startled amazement appeared on his face. He snapped his fingers.

"Of course!" he said in an awed whisper. He hesitated, looking around him at the walls of his room. Then

he took two swift steps and picked up the phone.

"LOOK, FAROL," Blake said tiredly, "you can't talk to Overman. See?"

"I tell you I can and I've got to—at once and on the diplomatic wavelength," Dick said doggedly.

"Why can't you tell me?" Blake pleaded. "Then I'll report to the secretary assigned to supervise this job, and if he sees that it is necessary, he'll report to Overman's private secretary and she'll tell him about it. That's the only way it can be done. I'm telling you!"

"And I'm telling you," Dick insisted, "that if I don't get through to Overman at once and talk to him in private, you and the whole fifteen hundred secretaries and J. B. Overman probably won't be alive by the time I could get through to him the ordinary way. Believe me."

Blake looked at him hesitantly, ran his tongue over his lips nervously. "All right," he said with sudden decision. "If this is crackpot and costs me my job, you'd better steal a ship and head it toward some other solar system."

"It's got to be private," Dick warned. "If it isn't, I can tell you that Overman himself will see to it that everyone who listened in dies."

"Then how about you, after he knows?" Blake suggested dryly.

Dick shrugged. "Did Holmes ever try to get through to Overman direct?"

"Yeah, come to think of it," Blake said. "A few years back, he tried for several months. It was a standing joke for awhile."

"It wouldn't have been too late then," Dick said. "Now, Harper and Friedman are out there. Get Overman."

Blake drew back at the viciousness of Dick's tone. "Come with me," he said, almost meekly. "And don't for-

get to bring your toothbrush, chum."

"ALL THIS is top secret," the radio operator said. "A diplomatic law. Violation brings a death sentence. The diplomatic seal warning goes ahead by a full ten minutes as the channel opens. That seal warning switches each relay ship over to the secret wavelength so the message goes right through with no chance of snooping without breaking the government seals on the relay set. On the Earth, it goes onto a recorder, and a seal goes on the spool. The spool is delivered to Overman or whoever the seal warning addressed it to, and only he breaks the seal and runs it off on his own amplifier. It's all according to law, and you don't have to worry. It takes twelve hours for it to reach the Earth."

"OK," Dick said. "Get it started."

"You might be writing it out while I start the chain," the radio operator suggested.

Dick shook his head. "What I'm going to say doesn't need to be written out," he said.

"OK. Take that booth over there," the radio operator directed. "The red light'll go on when you're on."

Dick stepped into the sound proof booth and closed the door. There was a microphone resting on a small table. Head high on one wall was a red globe, unlit. Above it was an electric clock.

Dick sat down in front of the microphone and lit a cigarette. His fingers trembled.

FOR FIVE minutes he cursed the delay. After that he waited in dread. His cigarette burned his lip. He wiped it loose with a mumbled curse and immediately lit another.

When the red light lit up, it was an anti-climax.

"This is Richard Farol," he began.

"What I have to say must not be taken lightly. You must consider every word carefully, Mr. Overman. You must bear in mind that it is not established fact that I am giving you, but my own surmise, based on almost conclusive evidence. There is only one man that could possibly back me up, and his mind will not be restored to its full capacity for another six months due to circumstances which you can find out through the ordinary channels. That man is Mr. Holmes, the greatest authority on jellymonsters.

"The development of Andron was unusual in that there was no conflict with the natives. If there had been a single untoward incident, it might have been an entirely different story. The picture can change and might already be changed at this moment.

"There is one thing not known about the jellymonsters to anyone except Mr. Holmes. He tried to contact you directly a few years ago when he discovered what it was, and failed, due to red tape.

"Mr. Holmes was given the new mutation of a fatal disease that has a positive counter agent, to create a situation where he might possibly pass on his secret to me. He tried to do so, but collapsed too soon. At the time, we were two miles from the dome and it took twenty minutes to get him to the hospital where they were ready for him. The doctor says it will be a month at least before he is OK. Until then, he cannot verify or refute my conclusions based on what he said and upon other factors.

"This is my conclusion on the matter. The jellymonsters were unable to think, in the accepted meaning of the word, until human beings who think came to Andron. Their body structure is such that it is capable of any function possible to organized protoplasm. It is imitative, but more than that, it is able to perfect the imperfect.

"Man thinks. Therefore the jellymonsters learned about thinking and began to think. Man is intelligent. The jellymonsters became intelligent. Their thinking is superior. Their intelligence is superior. But they did not think before man came, nor did they reason before they learned reasoning from man.

"They took our machines and mastered their operation. They saw imperfections and changed them to perfection, within the limits of what we gave them to work with. Remember that.

"We have educated them in every field of thought. It is all abstract thought, and only a thinking pattern to them, but it is there.

"There is only one thing we have not done to date. We haven't taught them to torture and to be cruel and to wage war.

"Their behavior patterns are not honorable, as has been believed, but patterned after our own as they have learned them. We have stressed honor because we wanted them to believe we were honorable. We didn't know that we were setting an example, and that they would follow any example we set.

"At this moment, two men are missing. I understand they went out to get a jellymonster and torture it into disclosing the secret of using atmospheric heat for power. If they have done so, then the jellymonsters now know about torture and dishonor. It is then too late. If this is not so, then it must never become so.

"This is my own conclusion. It fits all factors of the problem. There is only one thing wrong with it that I can see, and that is that I can't see why Mr. Holmes would think it should be kept secret. It seems to me it should be broadcast so that everyone knows the danger.

"However, it is so important, that

whether I am right or wrong I dare not trust my own decisions on the matter. So I talked Blake into getting me a diplomatic channel so I could lay the matter in your lap and leave the decision up to you."

He hesitated, thinking over what he had said. Then he went on: "The proper course as I see it is to make an intensive search for Harper and Friedman, and at the same time prepare to evacuate the planet, with the extreme measure being to get all space ships away so that the jellymonsters can't study them and become an interplanetary menace. Unless you disclose the contents of this message or instruct me to do so yourself, I shall keep it secret."

He hesitated again, briefly, and set the microphone back on the table. Then he left the booth.

"All through?" the radio operator asked unnecessarily. At Dick's nod, he added, "Want to wait?"

Dick did a little mental figuring. "No thanks," he said. "I'll be back in twenty-four hours and wait then."

"I'll be here too," Blake said. "So long."

DICK PACED the floor of the radio station with nervous stride. The thumb and index finger of his right hand were orange from the continual succession of cigarettes.

He had spent a miserable two hours with Gerry, unable to tell her that what her father was going through was not an act of God but a deliberately executed bit of diabolicalism—unable to tell her, and hating himself for knowing.

The only comfort in that was that he could positively assure her that her father would be all right in a month or so. He had gone with her to see him. Mr. Holmes had lain, still as death itself, his white hair even whiter than the pillow it lay on. He

was almost hidden under the array of apparatus. The robot heart was just an enamel coated short cylinder—but four thick pipes went from it into the whiteness of a blanket of gauze on his skin-and-bone chest. A canopy over this setup turned out to be a mechanical lung. A sheet covered him up to his waist, but tubes led from strange objects and disappeared under this sheet.

Dick had led Gerry away almost forcibly; this had all been so unnecessary, so mad and useless. There could have been some easier way to accomplish the same objective, and a less swift instrument might have enabled Mr. Holmes to tell his secret with no misunderstanding.

He had complained bitterly to Blake about it.

"You should have stalled off on that trip out to the power plant," Blake pointed out. "If the seizure had come under the dome, there could have been a nice little deathbed scene where he gave you the secret. Then the counter agent could have been given and he would have completely recovered with no after effects."

"If Mr. Holmes had been given the opportunity to talk to Overman when he wanted it a few years ago, none of this would have been necessary," Dick groaned.

"I wasn't here then," Blake said. "If I'd been here, maybe he would have. I just heard about it at the time."

"I suppose you had nothing to do with Harper and Friedman either," Dick said accusingly.

"AS A MATTER of fact, no," Blake answered patiently. "I knew what they were going to do, of course. It's in my department. But they were to go at it alone and on their own as private parties with a scheme to learn the power plant se-

cret and get rich—just in case they were caught and the jellymonsters put in a protest.”

“Oh, so they were expected to protest,” Dick mocked.

“You’ve seen one of them,” Blake said. “Didn’t they strike you as being entirely human in their actions and thoughts? It was natural to assume they would protest. What else would they do? Of course, if they stopped producing U-305, we’d do a little protesting right back at them—with some persuading along with it.”

That conversation had taken place on the way to the radio station. After that had been three endless hours of waiting, and nothing but silence.

“Here’s a call signal,” the operator announced suddenly.

Dick froze as he was, his haggard eyes on the back of the operator’s neck. Even Blake seemed tense.

“Straight message,” the operator said. “No diplomatic channel. Here it comes. J. B. Overman to Blake. Cooperate fully with Farol. Subordinate all previous plans to his. Continue your reports through usual channel. Here’s some more: J. B. Overman to Richard Farol. Am giving you full cooperation. Suggest you confide fully in Blake. Two heads safer than one. In any case, your decisions supersede previous plans until further notice. Your responsibility now. Good luck.”

“Whataya know,” Blake said, scratching his head. He looked at Dick with a slow grin. “Looks like you’re the boss now,” he said softly.

“Maybe J. B.’s right about telling you,” Dick said as they left the radio station. “In fact, if what I told him is the truth and the whole truth of the matter, I can’t see why Mr. Holmes didn’t publish it instead of holding it back. Let’s go up to my room and order something to eat sent up, and I’ll tell you all about it.”

“YOUR CONTENTION, then,”

Blake said, “is that if Harper and Friedman did what they set out to do—snare a jellymonster and try to torture it into telling the power plant secret—whether they succeeded or not, they taught the jellymonster about torture and underhandedness; and now the things will be a threat.”

“What I think happened,” Dick replied, “is that they tried to do that but found the tables turned on them. The jellymonster they attacked learned about violence with everything they did. Its superior intelligence quickly made it improve on what they were doing and win out. It killed them. Killing them gave the jellymonsters another step in the problem of eliminating all the work they undertook unwittingly when they agreed to produce all the U-305 we asked for. With the FACT of murder, they will figure out something we can’t oppose—just like, with the fact of the power plant, they figured out how it could run without fuel, using the setup exactly the way it was, and imitating the air ducts to get the intensely cold air away from the near proximity of the plant where it would upset the whole process.”

“I begin to see the light,” Blake said, nodding his head slowly. “What we gotta do first is make an all out search for anything that’s left of Harper and Friedman and try to find out how they were killed. They took some kind of contraption with them to imprison a jellymonster. Maybe we can find that, if nothing else.”

“Their remains probably won’t be in plain sight,” Dick warned. “They may have been buried in the ground or hidden up in a Leper tree—or digested. They may have been carried much farther out than they could have walked before their air tanks gave out.”

“How about protection?”

"No," Dick said. "Maybe those two fell into a hole and got buried, and the jellymonsters don't even know about it. We don't want to do what we must avoid at all costs if it hasn't happened already. Just have the men fan out so that each one is always in sight of at least one other. And we can make it an exploration rather than a search, so the jellymonsters don't have to learn what's behind it."

"That's smart," Blake said. "I'll get started on it. You relax and take it easy. The minute anything turns up, I'll let you in on it."

"**H**OW'S YOUR father?" Dick asked. He had called Gerry and asked her to meet him in front of the hotel.

"About the same," she replied. "I went in and sat by his bedside for fifteen minutes this morning. His eyes are open, but the doctor says he isn't conscious yet. He tried to explain it to me, but I wasn't interested in how, only in when. I did gather though that the encephalograph will show when his mind starts functioning enough for conscious thought. His bodily functions are all restored. They haven't taken off any of the gadgets, though."

"It'll take time," Dick said reassuringly. "It's certainly remarkable how much the medical profession has advanced the last few years. Even two years ago they couldn't have saved him."

And two years ago they didn't have the germ they struck him down with, either, he thought bitterly.

"How're you coming on the power plant problem, Dick?" Gerry asked.

"No progress yet," he said cheerfully, glad to switch to another subject. "I suppose I'll fail like all the others. Theoretically, it's an impossi-

bility to run those plants on atmospheric heat. The law of entropy says that in a system where all the energy is distributed uniformly, there can be no method of extracting energy and doing work. That's what those power plants are doing."

"I read somewhere that theoretically it's impossible for a bumblebee to fly, too," Gerry said. "I have a theory of my own that everything that is theoretically impossible is possible practically."

"Then in your theory it would be theoretically impossible for something theoretically impossible to not be possible in practice?" Dick suggested.

"You sound like a lawyer," Gerry said tenderly, "and I love you, darling."

"**H**ELLO, boss," Blake drawled, his black eyes taking in the whiskey bottle on the table and the glass in Dick's hand. He shook his head in mock sadness. "So you're going sentimental. Too bad. You were beginning to show promise."

He studied the look in Dick's eyes briefly, then turned his own away uncomfortably.

"That's better," Dick said, setting the glass beside the bottle. "What's on your mind?"

"A dead jellymonster," Blake answered. He walked across the hotel room to the window and looked out. "It's coming in now," he said, jerking a thumb toward the window.

"Killed?" Dick asked bleakly. Blake shrugged without answering.

Dick stood up and joined Blake at the window. There was a small crowd following two men who carried a stretcher, headed toward the hospital building. The thing on the stretcher looked like a discolored, uprooted puffball. There was no transparency or lustre to it.

"I suppose," Dick said tonelessly.

"that that jellymonster will be more immortal now than all the others put together. Thin slices of it will eventually reach every scientific laboratory in the whole Solar System."

"A fitting epitaph," Blake remarked. He went to the phone and dialed a number. After he said, "Blake," he listened for ten minutes without speaking.

"I think your theory is going up in smoke, Farol," he said when he hung up. "It was found about three hundred miles from here, not far from one of the domes. The live ones offered no objections or opposition to bringing it in. There was no evidence of injury to it. At least, its skin is unbroken. The party that brought it in was pretty nervous about it. The man that found it called to the others and they kept together, afraid something might happen. The live ones didn't even let on they noticed anyone around."

"I'm comparing it," Dick said after Blake stopped, "to the actions of a gang of crooks when the cops carry the stiff out in a basket. Can't you just see them trailing after the cops and wringing their hands?"

Blake picked up the glass Dick had been drinking out of and poured himself a drink. "We who are about to die," he saluted.

THE PHONE started ringing. Dick answered it. It was Gerry. She wanted to know if Dick had heard about the dead jellymonster.

"I've got news for you," she said, after Dick told her the highlights of what Blake had learned. "Dad recognized me today. I just came from the hospital. He recognized me!"

"His memory is coming back then!" Dick said happily. "I said he would be all right."

"The doctor couldn't talk to me," Gerry said. "All the doctors in the

hospital are getting ready to dissect the jellymonster right away. It's cold blooded, the way they acted, Dick. They were falling all over one another sharpening their knives and things."

"You can't blame them," Dick snorted. "The anatomy of the jellymonster is the biggest enigma there is. They have a chance now to settle the argument about whether there are specialized cells or all purpose cells making up the thing. Now, in the next hour or so, that problem will be settled for all time. I'd like to know myself!"

"Dad looked right at me and smiled," Gerry switched subjects again. "I know he recognized me. Isn't it wonderful?"

"Sure, honey," Dick said. "Sure is. Wish I'd been there with you."

"Why don't you go with me tomorrow, Dick?" she asked.

"I'd like to," Dick answered. "I'll meet you there. OK?"

"OK," Gerry agreed. "Bye."

The phone rang immediately after Dick hung up. It was for Blake. Again Blake did nothing but listen—but this time for less than a minute. The forever calm imperturbable Blake stabbed unsuccessfully at the phone cradle with the receiver and dropped it after the third attempt. "That was Friedman," Blake said dazedly.

"Where was he?" Dick asked.

"That was Friedman," Blake repeated. "Don't you understand? THAT WAS FRIEDMAN!"

Dick slapped Blake. It was a sharp front and back hand double slap. He watched Blake's eyes get their old hardness.

"Come on," he ordered. "I want to see that thing. Maybe we'll find out some more of Holmes' 'awful truth'."

THAT SETTLES it," Blake said as they cut across lawns to-

ward the hospital. "I'll get in a thousand flame throwers on light tanks and wipe out every damn one of them."

In the reception room of the hospital, a nurse silently watched them pass by, her face as white as her uniform. Pushing through a swinging door, they saw a miserable huddle of white cloaked doctors and nurses half way down the hall.

Blake hesitated at the operating room door. Dick opened the door by gently pushing Blake against it. They went in together.

There was a strong odor of ammonia. The thing was on an operating table.

Dick wondered how anyone could have thought it anything but a human being in spite of its shape. Then he realized that he was seeing it through eyes that were ready to look for human resemblances, while the ones who had brought it in would never have thought of the possibility even in their wildest imaginings.

Two wooden faced doctors were cutting into it. Dick circled about the room until he could see what they were doing. Muscle tissue was unmistakable by its texture. It was pure white. Colorless liquids formed thick puddles on the white enamel top of the table.

There were no bones! That was, Dick realized, the main fact. In some way, the skeleton of the living man had dissolved in his body, and he must have lived a long time afterward for his arms and legs and head to shrink in until they were just loose places on the surface of the thing. Either that, or some chemical action had done it after death.

The doctors were cutting away at something almost transparent. They were taking thin slices and handing them to a weak kneed nurse who took them over to another doctor

bending over a microscope.

There was an air of tense haste—like the thing was still alive and they were trying to save its life. It was much deeper rooted than that, Dick realized. Each of them here in the hospital knew that this was something that the jellymonsters had done to a man—and they could do it to another person—any person. The jellymonsters were no longer the harmless alien form of benevolent life. Subconsciously, the change in attitude was being born here in the operating room—the change that would make the dome a fort surrounded by a horrible menace rather than the comfortable station on a well established planet.

SOMETHING caught Dick's eye. He stepped closer—almost bent over one of the doctors' shoulder. It was a severed blood vessel, from its shape. A colorless fluid was coming from it. It was flowing out in rhythmic, feeble spurts.

Dick became aware he was standing in the hall again, Blake on one side of him, a doctor on the other, holding him up. Needles were torturing the skin above his eyes, under his scalp. A nurse was wiping his face. Another nurse held a half-moon shaped aluminum pan.

"Feel better?" the nurse holding the damp cloth said in a reedy voice, her own expression saying she wished she were a little girl again, starting life over, so she could stay at home and never leave it.

"Let's get out of here, Blake," Dick said, shaking himself free.

Outside, the smoothly mown grass was intensely green. A bed of bright red blooms bordered each side of the walk leading away from the building. The fragrance was strong and pleasant. A hundred feet away, a man and woman were laughing about some

secret they shared. A hundred yards diagonally across the intensely green lawn the hotel stood, a place of sanity and ordinary things.

"I could use a drink," Dick said, wiping his chin with the palm of his hand.

The phone was ringing when they entered Dick's room. He ignored it and poured a drink. Blake answered it and found it was for him anyway.

"I don't know. Hang on a minute," he said into the phone. Then, to Dick, "What about the search? Should we call it off? We don't have to do much guessing about what's happened to Harper."

"That thing was still alive!" Dick said, unbelieving. "Call off the search? No. But don't let anyone go out there that knows what was brought in. And make sure they stay within sight of one another."

"What about arming them?" Blake asked.

Dick shook his head. "They'll be safe enough."

Blake gave instructions over the phone and hung up. "Do you think they'll find Harper?" he asked, glancing at the bottle.

"There's another glass in the bathroom," Dick said. "No, I don't think they'll find him; but we've got to make sure. This thing's getting too big. We've got to wait until Mr. Holmes is able to talk. He'll probably be willing to tell us all he knows, after what we can tell him now."

"HELLO, DICK." Mr. Holmes' voice fumbled a little, but was confident. "The doctor tells me I was pretty sick there for awhile."

"You certainly were, sir," Dick said heartily. "I guess you would have died if they didn't have the very best out here on Andron."

"Yes, that's what they tell me," Mr. Holmes said.

"How are you feeling now?"

"Oh, fine," Mr. Holmes replied. "Gerry tells me that you and she are going to get married. That's the best tonic they can give me."

"I'm glad you approve of me," Dick laughed. "How's your memory? Can you remember anything of the trip back when you became ill?"

"Oh, yes," Mr. Holmes said. "I can remember most of that until I passed out. The only thing I have trouble with is old memories. They're coming back slowly."

"Well, take it easy," Dick warned gruffly. "There's all the time in the universe. I'll go now. Just wanted to say hello to you. Don't want to tire you."

"Come see me again tomorrow, Dick," Mr. Holmes said.

"I'll do that—Dad," Dick said. "Bye now."

Blake was waiting out in the hall. He fell in beside Dick. They didn't speak until they were out of the building. "Why didn't you pump him?" Blake groaned. "He's strong enough."

"Shut up," Dick said bluntly, then added in a milder tone, "I just wanted to be sure his mind wasn't damaged. I've been marking time for three weeks since that thing that was Friedman was brought in, just to make sure Mr. Holmes would be OK. Now I know."

Blake said nothing.

"I'm going out and have a talk with the jellymonsters," Dick said when they were half way to the hotel.

"Alone?" Blake asked.

"Want to come with me?" Blake shook his head. "As a matter of fact," Dick added, "Gerry is going with me."

"When are you going?" Blake asked casually.

"Right after breakfast in the morning," Dick said. "I'll be back

by noon—and with all the answers that Mr. Holmes could have given me.”

“Don’t do it, Dick,” Blake said. “God! After seeing Friedman, I don’t think anything could get me outside the dome again. I’d hate to see you come back the same way he did.”

“I don’t think I will,” Dick said. “But I’m going armed.”

“That’s more like it,” Blake said, relieved. “Look. Give me a ring in the morning before you go. Half an hour before. OK?”

“Why?” Dick asked.

“I’ll tell you then. Got some thinking to do before then.”

DICK OPENED his eyes, abruptly awake, and stared at the ceiling. A dream had wakened him. A dream of a jellymonster running after him and calling plaintively for him to teach it to think. He struggled upright in bed, the movement bringing him completely awake.

His wristwatch said seven-thirty.

Half an hour later, bathed and shaved, he called Gerry on the phone. Her cheery voice invited him to hurry over for breakfast. He started to dress hurriedly. When he finished, he called Blake’s room.

“Dick,” he identified himself. “You asked me to call you before we left, Blake.”

“Yeah,” Blake said. “I’m going with you. How soon you starting?”

“With us?” Dick asked. “I thought nothing could make you do that. It’ll be a good half hour. I’m having breakfast with Gerry. Want to join us?”

“No thanks,” Blake said. “I’ll meet you at the airlock. If I’m not there, wait for me.”

It was a good forty-five minutes before Dick and Gerry reached the airlock. Blake was there, waiting impatiently, ready for stepping outside the

dome except for the glassite helmet.

“What kept you?” Blake said dryly.

Dick flicked him a grin. “Why’d you change your mind?” he countered.

“One thing,” Blake said. “Something that finally sank in. You say the jellymonsters didn’t know how to think before man came here, and that they learned how to think from us. What did they do if they didn’t think?” He stared at Dick and Gerry defiantly. “That’s what you’re going out there to find out, isn’t it?”

“Yes,” Dick said quietly.

“I’m going with you—to find out,” Blake said. “I can’t imagine anything learning how to think. Either it can—like a man—or it can’t—like a plant. If there’s an in-between, I want to find out about it.”

Dick and Gerry were putting on their plastic suits as Blake talked.

“That part is simple enough,” Dick said. “Gerry and I saw one in action when we were out with her father. The cells that make up the body of the jellymonster are versatile. They can form themselves into eyes or ears, into optic nerves or auditory nerves. They could as easily perform the functions of the brain cells in the process of thinking.”

“Then why hadn’t they done it before?” Blake demanded.

“Not having ever thought,” Gerry said, smiling, “they never thought of it.”

“Oh, lord,” Blake groaned while Dick laughed.

BUT MOMENTS later, as they stepped through the airlock into the ammonia-saturated atmosphere of the Andron and walked toward the edge of the leprous forest with its dead white leaves that winked in red reflection of the beacon lights of the dome station, they were not laughing.

They were sober and silent, walking side by side, each immersed in his own thoughts. Gerry was thinking of her father back in the hospital. Blake was thinking grimly of the thing in the hospital laboratory that had once been human, and nervously caressing the butt of his automatic.

Dick was thinking of the jelly-monster that he had talked with three weeks before when he and Gerry had come out here with her father, and wondering if that strange creature would still remember its promise that he was now accepted—or whether it and its fellow creatures would now be hostile toward him.

The alien forest stood about him and his two companions, threatening in its very silence and immobility. The distorted forms of the trees stood as though waiting for him to pass before turning into ghouls and stalking him. He turned his head nervously to look back, then shrugged off the feeling with a mirthless chuckle. It was just his imagination playing tricks on him.

Underlying it, though, was something very real. A threat all the more real because its exact form was unknown. Andron had been a planet of stability and peace. Mankind had come to it, and its creatures had learned to think where before they hadn't known what thought was. But had they been mindless? Had they been no better than their microscopic counterparts on Earth, the bacteria that break down dead vegetation to make humus and free chemicals for the vegetation to use over again?

What was the danger that could threaten to destroy all on the planet? Or was there a danger of that magnitude? Yes, Dick decided, it was of that magnitude—or could be. The jellymonsters had picked up the ability to think from Man, and gone ahead of Man in it. If they could out-

think Man, they could wage war against him on all fronts and destroy him.

But that wasn't it. Dick frowned in an effort to recall what Mr. Holmes had said. That was it—he had said J.B. didn't know the awful truth! What had he meant by that?

BLAKE'S VOICE broke in on his thoughts. "Where are the jelly-monsters?" he complained.

"Huh?" Dick said. Suddenly he realized they had walked a long distance, and they hadn't seen one of the creatures yet, where ordinarily they would have seen several by now.

"This looks bad," Blake went on nervously, "I'll bet they're getting together for a big confab—or maybe even organizing already for war against us. I'll bet when we see one we'll see a lot of them together. Then we'd better head back to the dome. Fast."

"You might be right," Dick said. "I wonder what Harper and Friedman tried to do to them? If we knew, it might make a difference."

"I can make a guess," Blake said. "They tried to torture it in some way. Maybe fire, maybe poking it with sharp points—knives or sticks."

"Dick!" Gerry said suddenly, her fingers gripping and digging into his arm against the flexible covering of his suit.

He and Blake followed the direction of her eyes. Then, together, the three went slowly toward what they saw.

It was Harper. Blake's explosive, "Harper!" provided the identification. But he was not a bloated monstrosity as Friedman had been.

Dick bent down quickly and examined the body. Harper had been dead for perhaps a month. There was the normal decomposition for that length of time. His protective suit

was gone. His clothing was bleached out and partially eaten away by the corrosive atmosphere, his hair almost artificially white.

A knife had sliced across his chest several times. It was still buried to the hilt over his heart.

"So..." Dick got slowly to his feet. "They used his method to kill him, then a method of their own on their second killing."

"But how'd he get here?" Blake said. "This ground has been searched countless times in the past few days."

"Let's get him back to the dome," Dick said. "Help me lift him over my shoulder."

"**W**HERE ARE you going, Blake?" Dick asked.

"Where do you think?" Blake snarled. "There's only one way to handle those blobs of jelly. They're going to pay for Harper and Friedman."

"I was expecting you to try some fool move," Dick said. "I'm giving orders here now, and I say that you're doing nothing."

"This is personal," Blake said. "Harper was a friend of mine."

"I know how you feel," Dick said, following Blake's eyes to the limp body of Harper on the hospital stretcher where he had dropped it. "But we've got to move cautiously. There's some danger out there that we don't know about."

"What danger?" Blake asked. "That those jellymonsters will get hostile? We can wipe them out."

"I don't know what the danger is," Dick said. "I wish I did. Did you ever have a hunch, Blake? I've got one about those queer blobs of protoplasm. About this whole planet."

"Yeah?" Blake said, a skeptical sneer on his lips.

"Yeah," Dick said slowly. He looked into Gerry's eyes, glanced

briefly at Blake's eyes glittering with anger, and walked over to a window with his back to both of them. "It's tied onto a lot of things. The jellymonsters' learning about thinking from man. The atomic pile somewhere in the heart of Andron that keeps its surface just the right temperature to support life comfortably even though the planet is too far from the sun to get enough heat from it. It's mostly about the jellymonsters themselves. Something I can't pin down."

"Hunches are really subconscious reasoning. Or so the psychologists say. I think Gerry's father found the answer. The horrible truth as he called it. Somewhere in my subconscious the answer has clicked, but I can't reach it yet. Whatever it is, I have a strong feeling that if another hostile act is committed against the jellymonsters that unknown horrible truth that Mr. Holmes spoke of will become horrible destruction."

"How could it?" Blake asked. "Sure, they could use their new powers of reason to build up a defense or attack, and try to wipe us out. But how would they go about it? How would they find an answer to tanks and gasoline jelly and machine guns?"

"Could a caveman with his club possibly have imagined a modern tank with its flame throwers and automatic machine guns?" Dick said. "Nuclear science teaches us of the awful potential destruction contained in the most innocent of ordinary matter. We've tapped some of it. The jellymonsters are smarter than we are."

"Then what are we going to do?"

"I'm going out there alone," Dick said. "Somewhere in the back of my mind is the answer to all this. Not only the secret of what makes the power plants run without fuel, but why the jellymonsters didn't know how to

think before they learned from us, and what form the danger Gerry's father hinted at will take. I think out there I might find the missing elements that will bring it all out. Meanwhile, I'd suggest that you give orders to prepare the entire planet for emergency evacuation." He turned to Gerry. "Gerry, you'd better stay with your father. I may fail. If I do he may be able to provide the answers. I'll be back as soon as possible."

DICK WAVED at Gerry and Blake through the transparent wall of the dome, then turned to face the inscrutable Andronian jungle with a grim smile. He walked swiftly, his legs and feet settling into the pattern of walking that would take him speedily across the springy ground.

His feet took him along the same trail that he had covered with Mr. Holmes. A theory, incredibly fantastic, concerning what made the power plants turn out power without consumption of fuel, was slowly shaping itself in his thoughts.

All the others who had tackled the problem had started with the assumption that the jellymonsters had used some new principle for actually drawing on the heat of the atmosphere. That had been the obvious course. Warm air went down through the stacks and came out frigidly cold.

There had been only one thing wrong with it. Dick had sensed the flaw when he first stepped into the plant after the jellymonster, with Mr. Holmes and Gerry, but had kept silent. His keen ears had detected the flaw.

The turbines had been using power, not generating it. Almost silent though they were, there was a subtle difference in their hum over what it should have been.

The huge generators could as easily be motors, if there were a source of

power to run them. Motors and converters. In that kind of setup, the turbines would serve the function of governors, becoming huge refrigerating units.

Dick pondered on what the source of electric power could be under such a setup. The generators in their capacity as converters would take almost any type of electric power and shoot it out into the power network with the proper characteristics of frequency, voltage, and amperage.

But regardless of the source of electric power there would have to be heavy conduits leading into the plant from someplace, and that was what he must find. Those conduits.

He came within sight of the power plant and paused, his eyes exploring the rocky slope leading to it. They narrowed suddenly as they came to rest on the white billows of frozen vapor welling from the cold air outlet the jellymonsters had installed.

"That would be the most logical place," he whispered to himself. "Not suspecting an external source of power, no one would brave the cold to look in there. It would be a perfect covering to hide things."

HE WALKED toward it until he stood at the border of the vapor area, trying to see through it. The surface of his helmet frosted over so that he had to retreat.

Skirting the vapor, he went around to where it emerged from the ground. Wisps of vapor frosted his helmet.

"Why is there the vapor?" he said thoughtfully. "It should have been completely condensed from the cold air before it came out. Of course! That's the explanation. This vapor is caused by condensation of vapor in the outside air. Inside the shaft there won't be any!"

He carefully studied the ground near the opening to the shaft. He

knew he would have to be careful. A rip in his plastic suit would spell doom. The jellymonsters might have installed traps to prevent what he was planning on doing. He would have to feel his way, step by step, braving the frigid blast in the hope that he could survive it.

An idea suggested itself to him. He placed his gloved hands against the front of his helmet and stuck his head into the vapor. In a moment he took his hands away. For a brief instant before the area where his hands had been frosted over, he saw the shadowy outlines of the shaft opening. And it was large enough for a man to enter.

He went up to the power plant and searched through the lockers until he found a hand operated flashlight still in working condition. Using this he held one hand over his helmet and put his head into the cloud of vapor, directing the flashlight beam into the shaft opening. When he took his hand away and looked he saw about what he had suspected. Directly in his path if he had stepped through blindly was a square opening in the floor of the shaft. He could have fallen into it.

He retreated to where it was warmer with a grim smile. While he rested he looked down at the edge of the jungle, trying to see if any of the jellymonsters were there watching him. If they were, they were well hidden.

Finally he was ready. He went to the edge of the vapor cloud and, with one hand pressing against the front of his helmet and the other working the flashlight, stepped boldly into it.

CAREFULLY HE skirted the opening in the floor of the shaft. Working the flashlight generator with a regular constrictive movement of his fist, he took his hand away from his helmet briefly. The shaft continued

straight ahead in the direction of the power plant. There were no further holes in the floor.

But almost instantly the helmet frosted. He clamped his hand on it to thaw it out, frowning. In here, according to his theory, it shouldn't frost over. After a moment he took his hand away. For a few seconds he could see, then frost grew on the plastiglass.

His hands were growing cold. He took a few steps forward. His flexible suit crackled dangerously.

In another moment, he realized, it would become brittle and crack. Suddenly he realized why the helmet still frosted over. It was on the inside, from the moisture evaporating from his body.

Another realization smote him. The air in this shaft was still frigid. Did it lead only to the turbine exhaust passageways, or was there a secret opening ahead that branched off, where the air would be warmer?

He half turned, suddenly, consternation distorting his features.

"That hole at the entrance..." He groaned. "That was it!"

He turned, walking stiff legged. Each time he warmed the front of the helmet with his hand it took longer to clear it. After interminable moments he reached the opening in the floor. He turned the beam of the flashlight into it.

There was a drop of three feet. Steps led downward into the darkness.

He stared, slowly absorbing the realization that he had been right in his guess. And slowly something else penetrated his thoughts. His helmet wasn't frosting over. There was warm air coming out of the shaft.

Almost sobbing with relief he threw caution to the winds and dropped into the hole, stooping on the steps until the ceiling of the sloping shaft raised

to accommodate his height.

His suit no longer crackled from the cold. He increased his pace, his eyes darting ahead sharply, etching every detail of his passage into memory.

The steps ended. From the side of the third from the bottom a thick wide metal conduit emerged, to run along the vertical tunnel a couple of feet off the floor. Dick looked at this and nodded. It was the conduit holding the heavy busses that carried the electrical current that had its source somewhere deeper in the planet.

He had been right. The jellymonsters hadn't found some way to defy the laws of entropy, but were getting their power from some other means, using the power plants to disguise the very fact that they no longer had need of them!

Suddenly he stopped in indecision. Right now he had something that should be told to the authorities. Should he return to the dome and tell them?

The memory of Friedman's bloated, still living body caused his lips to compress in determination.

"No," he said. "I've got to go on until I find out the whole thing."

About him as he hurried on was nothing but silence and the wet walls of the tunnel. There were no branches to lend confusion. The tunnel curved occasionally. At times it sloped upward, but most of the time it sloped downward.

He guessed that he must have gone at least a mile when he abruptly spied a figure approaching him from ahead.

He stopped.

THE FIGURE was that of a jellymonster. It had formed its body into a globular shape atop two blunt legs for walking. It glistened in the light of the flashlight like some monstrosity made of glass.

Suddenly it veered to the right and

disappeared. It had gone into a side tunnel. And it hadn't seen him. The reason why came to Dick. It would have had to form a lens in order to see him, and if the flashlight were not on there would be total Jarkness here.

He hurried forward to where the side tunnel began. Ahead he could see reflective glitters that revealed the progress of the jellymonster. Should he follow it? he asked himself.

The tunnel the jellymonster was in stayed level and straight. Dick used his flashlight only occasionally, letting the jellymonster remain at least two hundred yards ahead. Fifteen minutes later while he was in total darkness he saw a faint light emerge ahead. At first it was just faint reflections from the crystalline walls of the tunnel. It illuminated the jellymonster with geometrical refraction patterns.

Dick slowed down, becoming more cautious. The jellymonster was out of sight around a slight bend in the tunnel.

He felt his breath coming faster, his heart pounding. If he were discovered... The memory of Friedman rose in his mind. He shuddered.

Now another sensation made itself felt. It was a vibration that seemed to come from the walls more than the atmosphere. Not of machinery, though much like the vibration of a huge electric transformer.

He crept around the bend in the tunnel. Ahead was a rectangular opening, brilliantly lit as though by bright sunlight. He stole toward it, ready to turn and run at the first sign of movement. This, he felt, was the place of the big secret of the jellymonsters, their source of electric power, perhaps of the "awful truth" of which Mr. Holmes had spoken.

Dick grinned suddenly, nervously. It was like a story book in its drama.

Perhaps the fate of the human race depended on him, on his not being discovered.

That thought made him glance behind him for the first time since he had entered the tunnels. Less than a hundred yards away was another jellymonster, its shape similar to that of the one he had followed.

It was advancing toward him unhurriedly. Had it seen him? Or was it, like the other, unconcerned at present about the sensation of light?

Dick retreated toward the end of the tunnel, his thoughts frantically searching for a means of escape from detection. And suddenly he relaxed.

"Of course!" he said soundlessly.

He froze against the wall and waited. The jellymonster continued toward him—and passed him without noticing him. After it had gone he let his breath out slowly, and followed, keeping a sharp eye in back of him so that none of the creatures could come up on him unawares.

He reached the end of the tunnel and emerged into a vast cavern.

IT, AS WELL as the tunnels Dick had been in, was not a natural cavern. It was artificial. Across its gigantic flat floor were distributed enormous cylindrical forms more like oil storage tanks in an oil field than anything else.

The nearest was a hundred yards away, and from where Dick stood he could see down the full length between two rows of the huge squat cylinders. The walking jellymonsters were in his range of vision, still continuing along their way unaware of him.

He watched, spellbound, for a long minute, then jerked his eyes back to the tunnel. Another of the walking jellymonsters was coming.

He stepped out of the tunnel and pressed against the wall of the cav-

ern, remaining motionless until the creature emerged and started its trek across the cavern floor.

He wondered where they were going, and why they followed each other so regularly, but so far apart. He surveyed what he could see of the cavern, speculating on what his next move should be.

A glance at the pressure gauges on his oxygen tanks decided him. He would have to move fast or he wouldn't get back to the dome before his oxygen ran out.

He struck out boldly into the cavern, taking a direction toward one of the cylinders that would quickly hide him from possible discovery by any jellymonster on the path taken by those three.

When he reached the cylinder and circled it until he could no longer be seen from the tunnel mouth, he placed his hand against it. The vibration he had felt seemed to come from it, and probably came from them all. And it was warm to the touch. Much warmer than the air. The suspicion that had been growing in his mind crystalized into conviction.

"It's an atomic pile," he muttered. "Here in this cavern is more atomic energy than there is anywhere else in the solar system—and built by the jellymonsters unless there's some other intelligent form of life down here!"

He hurried on to the next giant cylinder wondering uncomfortably if the radiations were strong enough to do him any harm. It was like the first in every respect.

He went on, to cylinder after cylinder, slowly working across the cavern until its ceiling hung far overhead. And as he went, he kept thinking of those three jellymonsters and wondering where they had gone.

Finally he went back into the lane where they had been walking to see if they were still in sight. One was

less than fifty feet from him, its transparent legs moving like sentient glass trunks in a semblance of human walking.

He followed it, throwing caution away. There wasn't time for caution, he decided. He would have to find all there was to find quickly and return to the dome.

Finally it approached one of the atomic piles and stopped. As Dick watched, it settled to the ground, a globular shape similar to that first one he had seen from the spaceship as it landed at the dome when he arrived on Andron.

Then, with serpentine slowness, a rope-like pseudopod came out from the jellymonster. It touched the side of the cylinder. Dick became aware that the volume of the jellymonster was growing smaller. Abruptly there was nothing left but a tail of the pseudopod that disappeared into the side of the atomic pile with an almost playful twitch.

Dick rushed to where the creature had been and examined the wall of the cylinder. There was a small round opening, barely two inches across, and as he watched, it closed so that there was no sign it had been there.

"It went through a two inch opening into a radio-active pile!" he said dazedly.

He stared at the blank wall.

"Or is it an atomic pile?" he muttered.

He looked at it with new eyes, seeing things that he had missed before. And suddenly he was running back the way he had come, the last bits of the puzzle that Mr. Holmes had referred to as the "awful truth" falling into place in his thoughts.

"HURRY," Dick said tensely. "Every person on Andron must be off the planet as soon as pos-

sible."

"But why?" Blake asked. "Orders like that can't be given without some pretty good evidence that it's imperative."

"It's imperative," Dick said. "Believe me it is. But there's no time now for explanations. Very shortly this planet will cease to exist. Get the necessary orders issued. If I'm wrong Man can always come back. If I'm right the people on Andron couldn't be brought back to life with their atoms not only torn apart but changed from what they are now as atoms."

Frowning, Blake turned away and went to the phone. And shortly people began clustering around the lock where the space liner ready for departure to Earth rested its nose.

"What is it?" Gerry asked Dick softly after Blake, with a final black frown, had departed.

"We can talk about it later after we're out in space," Dick said. "Let's go make sure your father is on the first shipload to leave Andron from this dome. And Gerry—if we live, will you marry me?"

"If we live?" Gerry echoed.

"Will you?" Dick asked fiercely.

"If we live," she said, "yes, darling."

"ALL RIGHT," Blake snarled. "There isn't a soul left on Andron. It's taken forty-eight hours of titanic action, and every ship is loaded tighter than a sardine tin. We'll be lucky if half the people don't die. Will you tell me what it's all about now?"

"Not yet, Blake," Dick said. "And don't distract me." He turned back to the chief electrician. "Let me get it straight now. The visiscreens are really television screens, and what is brought to them comes through a television camera. The camera picks up

a fine beam of light and transforms it into an electric current, so that the intensity of the current varies as the intensity of the light."

"That's right, sir," the electrician said.

"What if everything the camera was pointed at became suddenly very much brighter?" Dick asked. "Would the electric current flatten out, or would its strength be compensated? I think you know what I mean. The same system is used to get the sun's corona without an eclipse. It's similar to decible control on sound radio."

"I'm afraid we don't have that on them, sir," the electrician said. "We have one, all right, but it only responds to slight changes in intensity."

Dick was looking thoughtfully up at the four screens on the wall of the pilot compartment of the ship.

"Never mind," he said suddenly, his voice tired.

The others turned to see what he was looking at. The stern screen was pure white in the center. The circle of luminescence was visibly growing.

"Hey!" Blake exclaimed. "What's that? That's where Andron is supposed to be!"

"That is Andron," Dick said.

He turned abruptly and left the pilot compartment, hurrying until he reached the compartment where Gerry and Mr. Holmes were. He hesitated, swallowing, then opened the door and went in.

Gerry looked up with a smile.

"What's happened to Andron, Dick?" she said.

Dick's eyes went past her to Mr. Holmes. Silent understanding passed between them.

"It's happened, hasn't it?" Mr. Holmes said.

"Yes," Dick said.

The door opened. Blake stood there.

"Come in," Dick invited. "I guess

I can tell you what's happened now."

Blake came in slowly, closing the door behind him.

"You see," Dick began, "the answers were all there if we could only have seen them. The jellymonsters were analogous to one-celled microscopic organisms on earth. In other words, protoplasm. I would call it intelligent protoplasm except for the fact that that term isn't what I want. Intelligence implies thought and the jellymonsters didn't think until they imitated the functioning of man's brain.

"NO," HE repeated sadly, "they didn't think. What they did was more basic than thought. Their entire being reacted to environment. They were Life in the raw. Primal life force embodied in matter and shaping it. The same thing works in us, but sublimated to the point where matter keeps it under control. It's working on a more basic level than thought.

"I think all life goes through that stage. At one time the Earth was like Andron was. Finally the life force on Earth found man as the ideal shape for its final integration, and thought was the last development.

"But in the beginning there was only integration, building up, and permanence. Even today the simpler life forms never die, but divide, each part living always and never dying. But man dies. And atoms explode.

"Did you ever wonder where the atoms that explode came from? It's the bigger atoms that break up. How did they come into existence? Was there a time in the Earth's history when no atoms were breaking up, but all atoms were forming into bigger and bigger atoms? Andron shows that there was such a time, when the life force was building. Building toward stability.

"But we came to Andron. The primal protoplasm that was taking simple atoms and building them up into heavy atoms picked up the ability to think from us. We took the jellymonsters with their newly developed conscious minds into theaters and showed them all the wonders of civilization. They admired us. They wanted to be like us. But they didn't know how to be like us.

"They found out how." Dick's voice became bitter. "Friedman gave them the answers. Calcium. Friedman tried to cut into one. It got the idea and cut into him. He should have died, but the life force contaminated him and he lived even after they were through with him.

"A lot of the jellymonsters' behavior could be laid down to what we call instinct, but which is really the direct knowing of things without the need of thought. On that level the jellymonsters retreated to their underground nests where they reproduced and started to work on developing a skeleton patterned after man's.

"I was down there. I saw their reproduction chambers. I realized that the basic life force is integrating atomic energy, while living matter is a delicate balance of integrating and disintegrating forces.

"We had taught basic protoplasm to think, and in thought there is always error. The jellymonsters could think better than we could, but in what they were doing they couldn't make a single mistake without causing what you see happening out there."

HE LOOKED up at the stern screen grimly. The screen was now almost entirely lit up.

"Maybe it will engulf us even out this far," Dick said. "Maybe it will engulf the whole solar system. Maybe we're seeing the first few minutes of a nova that will spread out billions

of miles into space. If that's so, then we'll just have to start over again, the spark of Life Force in each of us, and build up to the human form again in a few million years."

"But what happened?" Blake asked. "What was the mistake?"

"The mistake was the skeleton," Dick said. "The calcium structure of the skeleton collects heavy elements. All the jellymonsters were back in their nests growing skeletons and circulatory systems, but in their old form they kept the unstable atoms well protected from one another. Those that hadn't destroyed themselves and were eliminated in the progress of evolution. But suddenly the growing skeletons in all the jellymonsters began to precipitate the elements of atom bombs in close formation. Those deposits reached critical mass, and a few million atom bombs went off all at once."

The ship lurched suddenly. Dick sprang to Gerry's side and threw his arms about her protectively.

The ship lurched again.

"We're going to die!" Blake screamed. "It's got us!"

"Are we, darling?" Gerry asked.

"In a way, perhaps," he said.

"I think I know what you mean," Gerry said thoughtfully. "We'll die on the thinking level, but the spark of life in each of us will start to build all over again." She smiled up at him and crept closer into his tight embrace. "I won't mind, darling. Really I won't. Not if we start together."

As the ship shuddered in the grip of ever increasing gales of gasses at white heat, as the newborn nova swept outward, Gerry and Dick drew closer together, their lips meeting.

Just as they had done twenty billion years before, and would again twenty billion years in the future. For such is the cycle of nature that all things repeat themselves.



The CLUB HOUSE

Where science fiction fan clubs get together.

ONE OF the best ways to get a perspective on our times is to study how things were in the past. You come up with two diametrically opposite conclusions. (1) We haven't progressed a bit in some things. (2) We've progressed to a different world in others.

Most people who open with that philosophical remark then go on to say that our philosophy has stood still while our machine civilization has outstripped it, and we are badly in need of a philosophical revolution. I disagree.

Take the old foundation stone, "I think—therefore I am. Since I am, I must have been created. If I was created, there must be a creator. That creator must be God. Therefore God exists."

There was a time when the greatest thinkers in the world thought that the most irreducible bit of knowledge we could ever have was absolutely solid in reasoning. While they were arguing about the probability of the world around them even existing outside their thoughts, they were saying, "This, then, is the one thing that is absolutely true."

Think about it a bit. *I* is a nebulous and very complex concept. The conclusion, "*I am I*" is not reached, apparently, until the child is several months old. Then the bundle of sensations and dawning mental associations becomes lumped under the forming locus called *I*. But not all of them become so lumped. Only the ones that are pleasing to the *I*. A lot of them are shoved away and denied, and carefully walled off from the *I*. Others never come under the influence of the *I* at all. Very early the *I* begins to be affected by all these things that aren't really a part of it. This sea of extra-egocentric thought becomes what has been variously called the subconscious, super-conscious, engrams, subliminal consciousness, and so on. At times in some people the *I* vanishes or ceases to be aware even of passage of time, so that amnesia of various types appears. A man who can't remember anything he did beyond a certain point when he was drunk is experiencing that. A person who seems to come into existence walking along an unknown street in an unknown town with no past memories at all is experiencing that. A person who is arguing with someone, and the next instant—seemingly—is standing there with a smoking gun in hand and staring down at the corpse of the one he was arguing with, is experiencing that. Theoretically at

least, you could this very instant cease to exist, while no one ever found any reason to suspect it. Your body, your personality, everything about you, would go on as before. There are instances of fighters in the ring going all ten rounds and even winning the fight, going back to their dressing room, dressing, having something to eat while kidding with their friends—and hours later suddenly looking startled and saying in an incredulous tone, "The last I remember is in the third round!"

And "*I am*" is equally complex and nebulous. Existence is a complicated concept. There are orders of existence. The wind that blows the leaves off the trees in autumn has no existence in one sense. It is a mass movement of a very complex and disorganized aggregate of molecules and atoms called the atmosphere. The leaf is moved by an enormous number of actual blows from the atoms and molecules. The total effect is that of a mathematical fiction of velocities and directions on a par, so far as reality is concerned, with the death rate and the birth rate.

Actually, we know of nothing in our experience that really exists. We have a theory that there must be an underlying first order existence whose phenomena give rise to the experienceable reality in the same way that humanity gives rise to the death rate, and the movements of the complex bundles of phenomena known as molecules give rise to the statistical illusion known as the wind. But it's only a theory—and perhaps unprovable.

To go on, "Since I am, I must have been created" can be broken up into a theory that there is a strange process called creation which can roughly be defined as bringing something into existence, giving rise to theories about being and not being; the bald assertion that anything that is was, at one time, not; and the even balder assertion that it could never have changed from not being to being, without something doing it or causing it. In these days when the theory of variables and of functional relationships is so well developed the idea of a cause is rather archaic.

I am not an atheist. The object of this editorial is to point out something not generally known: Philosophy has today far outstripped even technology, that today those few of us who lift our heads above the rut of existence can see more clearly and with more open minds and

more secure reasoning than our ancestors ever could. In addition to this opening of the mind to realities and recognition of unreality there is something that is getting to be quite universal. That is a point of view called perspective. A new perspective is settling into the world. And science fiction is a major instrument in bringing it.

* * *

IT'S ALMOST to the point where it can be said that every day somewhere in the world a fanzine is being brought out. So when Harry A. Jansen of 401 E. 142nd St., Bronx 54, N.Y. wrote me a letter in which he expresses the desire to gather together a complete collection of fanzines all I can do is shake my head sadly in wonder. He already has quite a collection of prozines of all kinds. Anyway, his name and address is listed. If you want to get rid of that ten foot stack, he makes like he wants to trade money for it, though what good money would do you...

Walter A. Coslett's newscard still comes out often with well digested briefs of current news to watch out for. Twenty of them for half a dollar. The address is Box 6, Helena, Montana.

And SHANGRI-LA, the L.A.S.F.S. official organ is in the stack this month. It wasn't sent in for review though, apparently, but for editor Browne to read a couple of things that might make him recant his recent heresy against fan authors. So I won't review it. You can get it by sending two billion three million rasbuck-nicks (15c American) to Richard Terzian, 1305 Ingraham St., Los Angeles 17, California.

The OUTLANDER didn't come for review purposes either, I think, but to Mari, who is herself an Outlander and co-authors an article in it on the Norwescon. Mari also has a nice little weird short in it, "The Suppliant". The OUTLANDER is 15c, and you can get the next issue by sending your money to Rick Sneary, 2962 Santa Ana, South Gate, Cal.

Another item that came not for review is the NATIONAL FANTASY FAN, official organ of the National Fantasy Fan Federation to which I was recently elected an honorary member. This is the largest and most active fan group there is. For inquiries write Ray C. Higgs, 813 Eastern Ave., Connersville, Indiana.

That gets us down to review of the fanzines for this month. First of all will be an article Mr. Taurasi wrote for me to include in this column that I think of great importance.

* * *

THE FANTASY VETERANS ASSOCIATION, an organization of fans who are also veterans, is holding a "Fan-Vet Day" meeting in New York this Spring, and will feature the showing of one, and possibly two, fantasy movies and a giant auction of science-fiction items, including

original art-work from several of the magazines.

The idea behind FAN-VETS is to send magazines and books to science-fiction fans in the U.S. Armed Forces when they can't obtain them for themselves. They are running this one-day affair to raise money, by means of the auction, to buy science-fiction books and magazines for service fans.

The date and address of the meeting have not yet been decided, but further information, when available, may be had by writing to the FAN-VET Secretary, Ray Van Houten, 127 Spring Street, Paterson 3, N.J.

Fans who can get to New York for this gathering may be able to pick up some very nice original illustrations to hang in their den, or fill a gap in their magazine collection, by attending the auction, and will see a fantasy film as well. There will be no admission charge, and no collection will be taken up. The meeting will also be informal, and no "business" will be conducted.

Anyone who has the address of a fan in the service may do a friend a good turn by sending it to this organization. Under the present stepped-up draft program, a lot of fans and readers of science-fiction will find themselves in uniform, and books and magazines from this organization will mean a lot to any service fan.

* * *

FANTASY-TIMES: 10c; 12/\$1.00; James V. Taurasi, 137-03, 32nd Ave., Flushing, L.I., N.Y.. We might as well review Taurasi's regular zine while we're at it. If you subscribe to it you'll be helping the fan-vet project as well as getting the best coverage in sf news in fandom. On the front page is the announcement that the Rog Philllipses are now residing in Flushing. We are at this writing, but who knows where we'll be by the time you read this? So continue to send your fanzines and letters to Ziff-Davis. There's also the news that Lila Shaffer takes Bill Hamling's place as managing editor of the Z-D fiction group. Lila is a wonderful editor. I've watched her these past few years. She's okay. She has that faculty of infinite patience with her work that would make her a success in anything she undertook.

Bill Hamling resigned to take over the magazine *Imagination* which you'll find on your newsstand regularly. A letter from Bill tells me he had a little bad luck on the first issue under his direction. The printing plant burned down. He also says he has some really hot stories coming up in future issues too.

One of the best things about F-T is that James Taurasi goes around to the various sf editors and talks with them, getting first hand information about their policies and plans. If you class yourself as a writer rather than a fan this zine

is also a must. It gives you first hand inside information you should know.

PEON: 9/\$1.00; or write and ask for a free copy; Charles Lee Riddle, PN1, USN., Fleet All Weather Training Unit, Pacific, c/o Fleet Post Office, San Francisco, California. Along with it comes another fanzine of Charles' called **LEER** no. 3, published for F.A.P.A.. But getting back to **PEON**, there are two issues for review, Oct. and Dec., 1950, both with covers by Dougherty that are very good. In the Oct. issue is a fantasy opera checklist by Anthony Boucher. Other authors are Eli Nye Spry, T.E. Watkins, Roy Cummings, Jim Harmon, Erik Fennel, and Toby Duane, who write mostly short stories, but with a few good articles. This zine is published in Hawaii.

FAN-FARE: Jan., vol. 1, no. 2; 15c; Paul Ganley, 119 Ward Rd., N. Tonawanda, N.Y., with R.E. Briney as co-editor; has really climbed in the past year. It's as fine a zine as **DREAM QUEST** used to be, and it was one of the classic peaks of fan publishing. There's a guest editorial by Ed Noble worthy of publishing in all the newspapers all over the country on the subject of "peace" versus peace, and also a story by him with the title "War is H-thy. The lead story is "Choice", by Al Leverenz. There's a long story, with chapters even, by George Craig entitled "The Twilight World". Del Close, in "Fair Exchange", discusses books. Getting back to Al Leverenz's story, when I read it I thought of Howard Browne's recent comments on fan fiction and also something that Bill Hamling told me a few years ago. A good story can be almost unreadable because of stilted and artificial dialogue. It's not exactly any single line of dialogue, but the over-all thing. You can argue that the talking is being done by people of the future or of another race or civilization; but the fact remains that if that is accepted as "true" the story is still "translated" into language of today—and must therefore sound like *people* talking. Alfred Martin may say, "Gho, thoughsette and skynne an gazzelle, vairlotte," in the hypothetical world of the story, but if his thought is exactly equivalent to the modern expression, "Go jump in the lake, stupe," it should be the latter. It's more real to the reader. Language changes, but meanings seldom do in the abstract. Today one says, "Nuts!", while yesteryear one said, "Pfah!" Stick to language the reader knows. Don't get too pfah off the track. Things like "Hail, Worship," cried the chief physicist," stamp a story as unreal with a big bright glaring stamp. In contrast, "The Twilight World" by George Craig, though just as alien in setting and characters, is made very convincingly real by having the characters speak as you or I would naturally speak. The real trick is not to make them speak artificially but

to make them *think* differently in a convincing manner. When you do that you have achieved alienness.

CHALLENGE: 30c; Lilith Lorraine, Avalon World Arts Academy, Rogers, Arkansas; a poetryzine, though it has other things such as reviews and news. And it wants science fiction shorts now too. It's distributed not only here, but in several foreign countries. Lilith Lorraine's editorial tells of her trip to Mexico to a poetry day festival. It was so interesting I wanted to pack up and move down to Cuernavaca myself! The best poem this issue in my opinion is "Any Spaceman to his Love", by Evelyn Thorne, in which the swooning spaceknight offers his love this impossible thing OR that impossible thing and she calmly asks him to fetch both when he returns.

JOURNAL OF SPACE FLIGHT: the Chicago Rocket Society; 25c; Wayne Proell, 10630 S. St. Louis St., Chicago 43, Illinois. The society holds meetings every month in Roosevelt College in Chicago. Their journal is not only very interesting but a valuable adjunct to the literature of what will soon be an ordinary industry: Space travel. In this issue is a discussion of the possibility of silicon based life. That's a subject stf has dealt with before, and is treated here very intelligently. "Celestial Mechanics and Rockets" is another of the articles. Rocket Abstracts, which are digests of items of interest to rocket enthusiasts form the main body of the zine. It's not only interesting reading, but is an excellent thing to hang onto for future reference.

EUSIFANSO: Jan. 1951; 10c; sponsored by the Eugene Stf. Society. Editor, Rosco Wright, 146 E. 12th, Eugene, Oregon. This zine is getting bigger and better all the time, which goes to show that all you need is some industrious club members and enough subscribers to keep the expense of publishing down within reason and you can put out something wonderful. Lead story is a short, "Atlantean Peace", by Manly Banister, which, although pretty good, shows that for once Manly has slid down a —. "Nuclear Space-Drive", by Norman E. Hartman is a good enough article to be in a prozine. And something really full of possibilities is the article on a space laboratory.

There's plenty more, and the printing in this zine is a work of art in itself.

SINISTERRA: 25c; vol. 1, no. 3; 3200 Harvard N., Seattle 2, Washington. This is by far the best issue of any fanzine covering the Norwescon. The pictures in it alone are worth a dollar of anyone's money. They are of the authors, editors and outstanding fans, and they are the best shots I've seen. The two of me I didn't even know were being taken at the time and are really nice. But not only do the

pictures top all competitors, the reports on the convention are also the best I've read. If there wasn't another thing in the issue I'd say it was a wonderful issue, but—take all that out and you still have the best fanzine for review this month. The editorial is one any leading editor of a nationally prominent newspaper would wish he had thought of first. In the department "Sinisterra's Hall of Shame" is an out-of-this-world classic of satire, "Re-jects of Time".

I met a lot of the Nameless Ones of Seattle at the Norwescon and they're all wonderful people. It would be a good idea for them to put in a bid for the convention for Seattle. I think they could top all past conventions. They like to publish fanzines, too, and this next one is also from them:

IMPOSSIBLE: No. 3; no price listed; edited by Burnett R. Toskey, same address as Sinisterra, produced on Wally Weber's mimeograph. The avowed purpose of Imp is to be so good it drives all the prozines out of business, and in the editorial page Burnett crows about his success so far in driving two prozines to the stands already. What he doesn't know is that the prozines will merely switch to reprinting the best stories of Imp and thrive far better than they are doing now. And "Mr. Tinkertoy", by Wally Weber, should be printed in a prozine in my opinion. It's a good story. The other three stories are also worth reading.

NEKROMANTIKON: 25c; Manly Banister, 1905 Spruce Ave., Kansas City 1, Mo. This is not a fanzine. It's an amateur magazine of WEIRD and FANTASY, and deserves a special place because it is succeeding at something definitely worthwhile; an amateur publication of fine quality in technical construction that will be and is a fitting vehicle for the best of amateur and professional stories. The paper, the printing, the artwork, and especially the three color cover, make this a zine worth keeping in your library. In his "You Who Have Slain Me—", Manly slides up to the top again as a good writer. It takes up just one of the 49 pages.

FANVARIETY: 10c; no. 4, Jan. issue; W. Max Keasler, 420 South 11th St., Poplar Bluff, Mo., Circulation, two paid subscribers, the editor insists; but if that's so a lot of you are missing something worth getting. There's plenty of good fan humor and enjoyable artwork. Seeing all the fanzines that come out, I have been able to get a sort of perspective on them, the same as we all get about people. Some people and some fanzines are intellectual, wise-guys, lewd, chatty, affected, etc.. And some are good regular guys. This is that type of fanzine. You'll like it. It's well rounded, with stories articles, poetry, and artwork.

DESTINY: no. 3; 15c; Malcolm Willits and Jim Bradley, 11848 S.E. Powell Blvd., Portland 66, Oregon. A photo-off-set fanzine in handy pocket size put out by the Portland group. Ralph Rayburn Phillips does a lot of the artwork for it, giving some weird effects. Jim Bradley does the rest of the artwork, except the cover which is by Bruce Berry. Best article in the issue is "Politics in Stf." by Willits.

EXPLORER: 10c; Ed Noble Jr., Box 49, Girard, Penn. A darned nice zine by itself, and also the official organ of the International Science-Fiction Correspondence Club. A letter from Ed Noble accompanies the January issue...

Dear Rog:

Many thanks for the nice review you gave EXPLORER in the March issue of *Amazing*. Now this issue heads your way. Latest gadget or innovation in EXPLORER is the publishing of indices of the various pro-mags by author, and this issue carries the indices for *Amazing* and *Startling*. We'll have two a month until our compiler runs out of patience. We'll have eight of them indexed and maybe more as time goes by.

Such lazy guys editors are! Gettin' married with the expectation y' gonna have help in reviewing the fanzines! Tsk tsk! But I acquired the same sort of laziness. Sometime this fall, probably around y' first anniversary EXPLORER shall gain a new stencil typist, far better than this one. (If y' want it for any fan-news, the gal is Jo Winogrocka of Beaver Falls, Penn.)

—Ed Noble.

Good luck, Ed. A bit of advice...don't let her put out her own fanzine or you're sunk. Mari is conducting the fan review column in *Imagination*, and that means I'll have to work harder to keep the Club House up on top.

There are a hundred and ten members of I.S.F.C.C. now, so it's going to give N.F.F.F. some real competition. Write to Ed Noble for information about it, and while you're at it send a dime for the next issue of *Explorer*.

BEM: Jan issue; 15c; (10c to NFFF members) John Kalas and Dennis Strong, 942 Scribner N.W., Grand Rapids, Mich.. A healthy regular zine with lots of fun and good writing in it. Best—and any fanzine will have a hard time finding better—is "Soft Now, Hate", by Dennis Strong. Katherine McLean has an article, "Re: Favorite Books". She, as most of you will know, is one of the newer of the pro authors to climb to the top. She and her husband, Charles Dye, author of "The Last Orbit" which appeared in *Amazing* not long ago, were over to see Mari and me recently. They're living in New Jersey way out in the country, after having lived in New York for years.

BURROUGHS BULLETIN: no. 10, no. 11; free to those who request it, until the issue runs out. Vernell Coriell, Box 652, Pekin, Illinois. A fanzine devoted exclusively to Edgar Rice Burroughs' works and their screen and cartoon appearances. You'd be surprised how much news there is just in the field of Tarzana! For example, Dr. Stanley Rundle of the London Society of Linguists has recently classified at least two hundred words in the language of the chimpanzees!

SAPSIDES: 12c; Wm. N. Austin, 3317 W. 7th St., Seattle 7, Wash. Published primarily for the Spectator Amateur Press Society, but for sale to the general fan public. You can get a nice bird's-eye view of this amateur press society from this zine. It's highly interesting. Plenty of good humor, too.

ORB, the "FLAIR" of fandom appears for the seventh time, in a sparkling new format. Stories are by Emil Petaja, who is often seen in **WEIRD TALES** and **FANTASTIC ADVENTURES**, and Ralph L. Brady. ORB also features excellent poetry by Ronald Bourgea, Lilith Lorraine, Agatha Grey Southern and others. In this is-

sue also are book reviews (one by L. Sprague de Camp), articles, and a special photo section with stills and stories of: "Destination Moon"; "Atlantis"; and a fantasy opera, "Love of Three Oranges". To round out an already scintillating issue, ORB contains an account of the Norwescon entitled, "Report From Up Yonder," told by the editor, Bob Johnson. The last issue of ORB was completely sold out, and although extra issues were printed this time, it is doubtful if the full demand can be filled. To be sure of getting your copy, send a check or money for a year's subscription immediately. The next issue will be *extremely limited*, due to an early deadline for the issue, number nine, and it is doubtful if all orders other than subscriptions can be filled.

That brings us to the bottom of the fanzine pile for this time. If you're a newcomer and are wondering why all the fanzines, the answer is that it's fun. Fun to write stories and see them in print, fun to be a publisher of a fanzine, and fun to know a lot of interesting people. Why not join the fun and be a fan?

—ROG PHILLIPS

ARE WE HERE TO STAY?

By CHARLES RECOUR

THE BIOLOGIST, Loren C. Eiseley, poses and answers an interesting question: "Is Man here to stay?" That question is not at all trivial, though we need lose no sleep over it. Eiseley surveys the biological world and asks the question in light of observed facts. All throughout evolution, life forms have eventually been supplanted by other and less specialized forms after a time. Will Man eventually be displaced, too?

It is clear that Man has come into equilibrium with his environment and it appears as if nothing, not even his tremendous penchant for devising self-destructive weapons, can shake that position. To all intents and purposes, we see that Man is here to stay.

We can judge Man's situation if we compare him with another creature remarkably like him, the ant. You might think that the comparison is unfair, but the ant is, excepting brainpower and tool-using ability, remarkably like Man. He has adapted himself perfectly to his environment, even to the point of cultivating food. Furthermore, the ant has met his situation and conquered it. It is estimated that ants have not changed very much in the *eighty million* years they've existed on Earth. If an ant can so well adapt and fit himself to his situation, what about Man?

Everything we've said so far seems to favor the immortality of the human race. Assuming that the Earth isn't shattered by a hydrogen bomb, we can imagine that

Man will always occupy his present position. Or can we? That's the question Eiseley really poses, and he asks it because of an obscure biological law called "Cope's law." Actually it isn't a law; rather, it's an abstraction of observation taken over a long time, and it seems to be immutable. We have no reason to believe that it shouldn't apply to all species, including Man.

Cope's "law" is a generalization which says that an advanced species develops, not from a highly specialized species—like Man or the ants—but from an unspecialized type, utterly adaptable. Cope cites numerous examples of this. Mammals sprang from a reptile whose only characteristic was a bloodstream with a controllable temperature. Amphibians, for another example, came not from a perfectly adjusted fish, but from a sluggish mud-seeker.

A study of the displacement of various species through time shows many more examples of this sort of thing. And that refers us to the original question: "Will Man be displaced?" If Cope's principle is sound, and we think it is, eventually Man is going to be supplanted by some other, more highly adaptable life-form. Man is adaptable, it's true, but so specialized, that any major catastrophe can knock him for a loop.

What species will provide our successors? From where—the air, the sea, or the jungle—will they come?

★ ★ ★

The Reader's FORUM



HOW LONG IS TOO LONG?

Dear Editor:

Just to make things interesting, I both agree and disagree with Wess Wakefield, who prefers "lots of short stories to two or three long ones." In my opinion this depends wholly upon the story. If you have a well written tale with a real idea carefully worked out and intelligently represented, and if the story is based upon a real fact in science which with a little imagination can be stretched to fit the mood of stf lovers—then only a long story will do the trick, and do justice to the ideas. I'd rather read a few intelligent stories on that line than a million hashed up, nonsensical hack shorts.

However, if the plot is based on something too sketchy to bear too much weight, it's logical that the story, being merely an exercise for the reader's amusement, should be short and to the point.

I like both types, though I do prefer all stories, whatever the length, to be well enough integrated that the gimmick is concealed somewhat. In other words, hack stories, to my mind, aren't even worth the cost of the ink to print them with. They disgust and disappoint me. And usually I'm not too hard to please.

Some of your art work is fine, and I found the shoot-'em-up cover, though ridiculously reminiscent of Westerns to be nevertheless intriguingly lovely, as to the hero and the heroine. They were very good to look at. The hero reminds me somewhat of my own husband, who, however, does not pilot space ships. He is merely a chief hospitalman in the Navy. But he's just as good looking as the guy on the cover. I only wish I could match the gal.

Anyhow, your magazine is worthy of being complimented, and your letter column is tops in its field. Never drop that, for it's my first interest, and brings our fandom into the closest knit fan club in the world.

Gwen Cunningham
8519 MacArthur Blvd.
Oakland 5, California

Someone once said that the only time

a story is too long is when you're aware it's a long story! It would seem the same holds true for a short: if you're sorry it has ended, then it's too short! —Ed.

HE BELIEVES IN WOMEN!

Dear Mr. Browne:

The March AMAZING is one of the best issues that I have read in some time. All the stories were good with well constructed plots and dialogue.

Williams' "Beyond the Rings of Saturn" was excellent, leading the rest of the stories. This was well chosen for the cover and incidentally Jones did a good job of it, girl or no girl. I get sick and tired of reading the letters that fill up half of the Forum that detest a bit of femininity on the exterior of your magazines. Do me a favor, will you? Tell those bums where to get off! You have to have something on the cover to make it look interesting.

A close runner up was "Whom the Gods Destroy" by P. F. Costello. (Say, what's the P. F. for?) There were only two things wrong with it. I couldn't understand how Clark got the money for Kirkland if he was supposed to be an FBI agent. Nor was it explained in the story what actually happened to the six men after Clark's real identity was known. It's true that he was stringing along with Kirkland so that he could investigate Carol Masterson's death. Please explain these minute details.

The shorts were tops, too, in the following order:

"You'll Die Yesterday"—very, very good. One of Phillips' recent best.

"Ticket to Venus"—good, with an unusual twist to it.

"Secret of the Burning Finger"—a nice transplanted western, but good.

"No Medal for Capt. Manning"—good.

"Laughing Matter"—fair.

Congrats again for the wonderful ish. In my opinion you have the science-fiction prozine second only to the semi-slicks. Keep up the good work, and I'll buy AMAZING always.

Ian T. Macauley
57 East Park Lane, N.E.
Atlanta 5, Georgia

We have a sneaking hunch that Mr. Costello forgot to tie up some of the loose ends in his story and will now come back at us, when he reads this letter, with some such glib statement as: "Well, my gosh, shouldn't something be left to the reader's imagination?" —Ed.

HIGHER MATH: 1 EQUALS 20,000!

Dear Mr. Browne:

AMAZING STORIES is showing great improvement—particularly in the short story department, where you once were woefully weak. You still show lack of a solid feature novel of 30,000 or more words, which would give a backbone to the mag. Anyway, AMAZING is now worth reading again!

While I'm on the subject, a real long novel by one Howard Browne would be just the thing. I think a 40,000 worder done with the same skill of "The Man from Yesterday" would pull your circulation up 20,000 with that one issue. Think it over.

Bob Silverberg
750 Montgomery Street
Brooklyn 13, N. Y.

Writing is hard work—and we've always enjoyed avoiding it. But we, of course, are at the service of our readers, Bob. So, using your own figures, we offer you the following proposition: Just as soon as 20,000 letters reach us requesting such a story, we'll write one! —HB

WISE GUYS AND SNOBS NEED NOT APPLY

Dear Ed:

I have been a reader of AMAZING for a long time. But somehow I just never got around to writing before. This letter has an ax to grind. But more of that later on.

I gather (from reading your letter column) that you are interested in what I, as a reader, think of AMAZING. I'm always flattered to be asked my opinion. So here it is—for all it's worth.

The greatest improvement that I have noticed is in the letter column. You have finally gotten rid of those wise guys who tried to be funny, but weren't. Another obnoxious group, that seems to have been mostly ousted, are those that try to confuse by quoting obscure technical jargon. Gleaned in most cases, I think, from some trade journal, and quoted in the hope of making the writer look brighter than ordinary. Some of my once favorite sf mags have slipped and fallen into this quagmire of technicality, in an attempt to be brilliant. And their superiority complex sticks out from between every page. Don't let this ever happen to AMAZING.

As for covers, and the lush ladies thereon, I'm afraid I'm going to have to hang my head and admit I rather like them. Science is my love, but without sex I don't

think it would go far. And I hope I may be excused for liking both.

Enough of my ax. Now I would like to ask some questions.

In preparing a manuscript for publication what about the matter of spacing? Should it be double spaced? Between lines or words? Is it permissible to use both sides of the paper? Should the sheets be fastened together? Or the words counted?

If you would set me straight on these points, I would be very grateful.

Ivan H. Copas
R. F. D. No. 3
Peebles, Ohio

We don't "oust" anybody, Ivan. Perhaps the kind of letters you mention aren't being written anymore; all we know is that no matter what our readers put into letters, the letters go into this column. Sometimes we have to cut a few lines to make things come out even; sometimes the language gets too strong for good taste; sometimes we get many letters along identical lines and use only that one which seems most representative. But by and large The Reader's Forum is where the reader can have his say—and we detest censorship!... In submitting mss. to any market, observe the following rules: Send only typescripts, double space between lines (but not between words), use only one side of the paper, with plenty of margin on both sides of the body of the story. It's not necessary to fasten the pages together—in fact most editors prefer them to remain loose. And by all means furnish an approximate word count in the upper righthand corner of page 1. —Ed.

WHY NOT SERIALS?

Dear Editor,

Science fiction had been in short supply in England for eight years until we began to get copies of AMAZING STORIES and FANTASTIC ADVENTURES.

The quality of the stories is quite high. I particularly like the short articles. Every one has been interesting or entertaining. "Masters of Sleep" was well written and almost pure fantasy. I enjoyed reading an attack on brain surgery and would very much like to know how near the truth the author was, regarding the effects of such surgery.

Have you ever considered giving us a serial? I remember, as a boy, a serial in AMAZING STORIES called "Skylark of Space." It was a really smashing yarn. Hope to see more science fiction in your stories—particularly about space travel.

C. A. Parker
16, Covert Road
Chigwell, Essex, England

While we have run serials in the past, and quite possibly may run others in the future, most readers prefer stories they can finish in one sitting... We have some

real space yarns coming up—the kind that prove that space travel and “corn” need not necessarily travel in the same circles!
—HB

BUT DID YOU LIKE THE COVER?

Dear HB,

What a cover! WHAT A COVER!! I like it better than the “Illusion Seekers” cover. I even think I like it better than the “Ultimate Peril” cover. And the pic for pages 8-9! This is the best art work you’ve had in a long time.

Oh yes, the stories. Not so good this issue. “Last Touch of Venus” was best, followed by “Satisfaction Guaranteed.” The rest ranged from slightly above average to poor.

Are you going to give out pix for best letters like FA? If you are, I vote for Mrs. Darough.

James Lynch
2630 Penn Ave., N,
Minneapolis, Minn.

In case you came in late, Reader Lynch is referring to the April issue containing the lead novel, “The Glory That was Rome.” Plans to give out illustration originals for best letters, both in AS and FA, have been dropped.
—Ed.

THANKS FROM HOLLAND

Dear Mr. Browne:

I’m writing this letter to express my gratitude towards a number of persons who have made it possible for me to take up reading STF again. Therefore, I hope you will be so kind as to publish this epistle in the letter column of your magazine.

First of all, Mr. Browne, I’d like to thank you for printing my first letter in the January issue of AMAZING STORIES, thereby giving my request a wide audience. In response I have received more than sixty-five different magazines: AS, FA, and many others! You people in the States who are able to buy as many mags as you want, can’t imagine how pleased and surprised I was and how much I enjoy reading this kind of fiction, which is practically non-existent here in Holland. To those who made this possible, my heartiest thanks! Alphabetically, they are:

Don Regan
6819 S. Claremont Ave.
Chicago 36, Ill.
Mrs. Carla Skowronska
167 S. Main Street
Fairport, N.Y.
David S. Watterson
123 W. Broadway
Butte, Montana

and someone whose name on the parcel was wiped out by rain. As even the address was partially illegible, I couldn’t write him/her personally. I hope, however, the sender will read this and know

that his/her package arrived safely and I’m very grateful. The address looks something like this:

.....AY
826.....d Ave.
Portland 2, Oregon.

Thanks for helping me again, Mr. Browne (I hope you will), by publishing this letter, too. Best wishes for you and your magazine!

E. Paul Engel
Cliostraat 37
Amsterdam—Zuid
Holland

It was a pleasure, Paul.

—Ed.

BACK NUMBERS AVAILABLE

Dear Sir:

Would you please publish this letter in one of your magazines?

I am forced to dispose of a large collection of science-fiction dating back to 1926. All of my magazines are in excellent condition, and many copies of AMAZING are included along with WONDER, FANTASTIC, STARTLING, etc.

William Buccil
299 E. 162 Street
New York 56, N.Y.

Which gives us a chance for a personal request. If you, or any other of our readers, have the issue of FANTASTIC ADVENTURES containing the cover story, “The Strange Mission of Arthur Pendran,” by John X. Pollard, and are willing to part with it, please let your editor know.

—Ed.

WHAT’S WRONG WITH WOMEN?

Dear Editor:

This is another one of those “first time I’ve ever written” letters you always receive. As a matter of fact it is the first attempt at getting my name printed in yours or any other mag.

One of the main reasons I’m writing this is in answer to the letter signed “Long Time Reader” in your March ‘51 ish. He (or she) as well as the readers constantly sound off on the sex element in your wonderful magazine. I personally don’t think it is overstressed either on your covers or in the stories. Every male reader (as well as female, too) likes a little “love” in the stories they read. The stories seem then more pepped up and life-like. In answer to the raised eyebrows I am not a BEM, do not chase females wildly around the streets and do not advocate turning cities into nudist colonies. Anyway, I think cutting “love and sex” out of science-fiction would not help spread it as fast as it is.

Jacques Behar
670 East 176th Street
Bronx 67, New York

AN ANSWER TO STAN HOLMAN

Dear Ed,

I would like to object to Stan Holman's letter to the Reader's Forum, A.S. Jan. 1951. Why should one be called a "low grade moron" if Stan does not agree with him?

I would not argue with him but rather like to point out several things which might interest you. (If Stan is guessing let me also try and guess.)

My reasoning is based on the theoretical point of view and I'll let you all compare facts with fiction.

As was suggested, time and again, the ultimate weapon would be a guided missile loaded with an A-Bomb, directed by radar, radio, television, etc. The one and only logical engine for such a missile is an atomic engine. Now, the trouble with such an engine is the deadly radiation it emits, but if we remember that a guided missile does not carry human beings, such an engine is a possibility because no protection (which is so heavy) is needed. And such an engine could function for years and years; instead of releasing the energy in one puff—as is done in an atomic explosion—it can be released in a measured amount and be used to warm the air passing an athodyde. Such an engine would function for years because of the atomic energy, and it won't have moving parts.

And what would the missile look like? If in the subsonic speed a wing in flight has to *push* the air aside, in the supersonic speed the wing has to *cut* it. The reason for it is: The body moves faster than the air can be pushed aside, and as a result it is compressed in front of the moving body. (Putting it in a rather simple and pictorial way.) For this reason for supersonic flight, the wing is made as thin as possible.

If we look at the leading edge of a wing as a wedge we may say that we are trying to decrease the angle of the wedge as much as possible. But there is a hindrance—the mechanical strength of the wing. We can't decrease the angle of the wing's leading edge as much as we want to because the wing will break when put under exertion.

It is a well known fact that we can decrease the wedge's *effective* angle by moving it in an oblique direction—as is done when cutting with a knife—and because an infinite long knife is a revolving disc (sharpened to a knife's edge) the best way of attaining tremendous supersonic speed is by building a revolving disc—a flying saucer! A classical example for such a thing is a revolving disc used in restaurants to cut bread.

Such a guided missile will be directed by radio, radar, and television from ground, and lurking high above clouds, at around 30 km, it will wait for the day it is needed. No trouble is foreseen from "skin friction" because in supersonic speed

this kind of drag is not only negligible compared to that of head resistance, but—believe it or not—decreases. Such a weapon can be built today—ergo, it has been built!

The above (which has been given here in the shortest possible way) was collected by me in April, 1950, and was published in "Bamachane"—the official weekly of the Israeli Army—in June, this year, in article form, discussing the destruction potentialities of such a weapon, and its influence on future wars.

I would gladly receive, and discuss, any criticism, but please cut out that "low grade moron" attitude.

Jacob Zahavi
54 Bar-Kochba Street
Tel-Aviv, Israel

SURE; WE LIKE TO BE LIKED!

Editor:

This is the first time I've ever written in to add my two bits to your Reader's Forum—but I think, among the many brickbats you receive, my bouquet may be welcome. I've been reading AMAZING STORIES since the early days when Hugo Gernsback was at its helm, when its columns carried only reprints and H.G. Wells, Jules Verne, and Garrett P. Serviss crowded each other issue after issue, until fantasy caught the public interest and new writers began to appear. Just as it pioneered the field—so, up to now, I think AS holds forth supreme in the genre fantastica. Sure, you occasionally give us stories that many of us don't think should ever have seen the light of print, but taking your mag as a whole, you've done and are doing a splendid job. Your articles are especially interesting; don't ever eliminate them just to crowd in another tale.

If any fans are interested, I am selling part of my collection of fantasy books, all in new condition, at about half what they cost to buy. Drop me a self-addressed stamped envelope for a list.

A. Zelitch
2645 S. Marshall Street
Philadelphia 48, Pa.

MAN WITH AN IDEA

Dear Mr. Browne:

As a favor to a reader for many years of your magazine, could you put me in contact with someone who knows all about rockets and who is perhaps working with them right now?

I have an idea I want to discuss with someone who really knows what the problems of escape velocity are and who can tell me if my scheme is at all feasible.

W.J. Feyerherm
3976 Idaho Street
San Diego 4, California

There are several rocket societies in this country—most of them doing serious and valuable work in that field. Many of

our readers will, we're sure, give you their names and addresses. —Ed.

McGIVERN MAKES GOOD!

Dear Mr. Browne:

I have just finished the March AMAZING. I mean, as nearly as I could. I never got beyond the first page in any of the stories, with one exception. This one story stands out like Mount Everest among the low red hills of Mars.

As you may have guessed, I am referring to the one by William P. McGivern, "No Medal for Captain Manning." This is the best story since "And No Tomorrow" by R. M. Williams, in the February, 1950 issue.

In one editorial some time ago you remarked on the stereotyped science-fiction stories that plague an editor. But you go right on publishing them, issue after issue being made up of the bang-bang space operas, or else westerns, detectives, or the Post type business stories thinly disguised by an inter-planetary setting. Since I am an old gal, in years and in s-f reading, when I run across a really good story like this one of McGivern's I feel you do not publish in vain. This story has an idea, it is logically worked out, it does not resort to fantastic trimmings to give it life, it has authenticity, the psychology is good and the writing is smooth, adult and beyond reproach.

I grant that the kiddie crop of readers probably will not care for it. The inevitable unhappy ending of such a story would put them off of it. But how else could it end? I think the author must have been thinking of Einstein's crack, "The fourth war will be fought with stones." I have often wondered what the harvest would be in youngsters conditioned by radio, comics, movies and video, to violence and mayhem, until such things become matter of fact and simply a means of entertainment. It is natural to suppose, as in the case of Captain Manning, that a man conditioned from youth to war could not act otherwise than Manning did—kill anything that might threaten his own security. A sad thought, but one that logically follows—are we already being conditioned for this kind of existence? It makes me glad I have but a few years before the last big adventure, though I would like to live long enough to experience space travel!

I get around the cover difficulty—tear them off immediately on purchasing the magazine and ditch them in the store! This will bring shrieks from collectors, but I do something even worse in fan eyes—I take the magazine apart and lift out the stories I consider worth keeping, thus making my own anthologies. My standards are pretty high, and the collection so far puts no burden on the shelves! So give, brother, and put out with some more of these well written, adult stories—what are you saving them for, the worms?

Rory M. Faulkner
164 Geneva Place
Covina, California

McGivern's story, "No Medal for Captain Manning," was originally purchased for use in the new AMAZING—which, for several valid reasons, did not materialize. Oddly enough—or perhaps not oddly at all—only a few letters praised the story highly. —Ed.

BLASPHEMY?

Dear Editor:

Regarding your issue containing "Weapon From the Stars"—as I have the British edition there is no date or number—I wish to comment on H. R. Stanton's "Man is the Measure." I am an art student, and in the course of study I came upon this, written about 1506 A.D.—rather before the birth of Le Corbusier. It comes from "The Literary Remains of Albrecht Durer."

"Vitruvius, the ancient architect whom the Romans employed upon great buildings, says that whosoever desires to build should study the perfection of the human figure, for in it are discovered the most mysteries of proportion."

It seems that no sf magazine can get too far ahead of the times. There is always a slip backwards, it seems.

As for the fiction and fact in the end pieces as a whole, I enjoy the articles but most of the stories are too full of the worst American style and ancient plots—or no plot.

You really shine with the main stories: the short-shorts don't stop me from buying! "Forgotten Worlds" by Lawrence Chandler is, of the few I've read, my favorite, though I've a sneaking suspicion it was in FA. I don't have it now, so can't check.

"When Two Worlds Meet," by R. M. Williams, and his "Land of the Golden Men," in my one and only U.S. edition—June 1949, are my favorite AS stories, but I have not as yet read many.

But I must confess a blasphemy—I like FANTASTIC ADVENTURES better than AMAZING STORIES. Or is it a blasphemy?

Peter Joseph Jobling
65 St. George's Road
Cullercoats, Whitleysay
Northumberland, England

FATHER KNOWS BEST!

Dear Sir:

I, too, feel finally compelled to relieve my feelings, as far as the covers of AMAZING STORIES are concerned. It is not that I object to the lurid colors, or the scantily clad females, but I do think that a magazine of your reputation could afford to do without the kind of cover illustration that the comic magazines need to attract customers.

I have read AMAZING STORIES for many years—17 or 18, I believe—and while I still have the courage to brave the pitying glances of my dealer and friend, the corner druggist, I simply cannot face my wife and children any more. After all, I supervise, the children's reading matter, and I cannot afford to risk the good example which I am supposed to be setting for them.

And so, to save the last shreds of my dignity, I tear off the cover as soon as I have bought my copy, and either throw it down the nearest sewer grating, or tear it into little bits and distribute it over the nearest empty lot. My dignity suffers, but what of it?—the standards of the home are safeguarded.

But even if you are not going to change the style of your covers, I shall keep on reading AMAZING STORIES. Where else could I find such entertainment for 25 cents?

And to all the other grippers, I recommend they follow the procedure I outlined above.

Fred Mink
2232 Georgestr.
La Crosse, Wisconsin

As we remember it, our own parents were pretty much upset over the pictures and contents of the things we read too many years ago. "The Wild West Weekly" according to them was little more than a passport to perdition—and Nick Carter and the Old Sleuth would make gangsters out of every one who picked them up. As a parent ourselves these days, it seems to us that children aren't going to be warped by what they read—unless they'd become warped whether they read such stories or not! —HB

AS MR. BECK SEES IT

Dear Mr. Browne:

You have done your best to vitalize AS since you took the editorial seat, what with all the announcements and very illustrative plans you outlined during the past, and as far as story quality goes, AS has not been in better standing since the ejection of the intriguing Shaver stories around late 1947. However, neither has AMAZING STORIES ever been able to surpass the standards of quality set forth prior to that date.

AS unfortunately, has a trend to appeal to young people of the fourteen to sixteen year old brackets. It may surprise you to learn that more people would read sfantasy and circulations would boom if this situation were not so. The most successful s-f publications, books and stories have appealed to a mature and above average group of people, that is why they succeeded.

It may also be surprising to most of us to learn that the most unintellectual and common mental does not mind having some thought provoking levity intermixed with

his entertainment. Actually, in tests conducted recently by one of the nation's leading universities, it was proven that the average man today is a better client to the various mediums of entertainment where he can learn something and which provide a literate stimulus for his mind, rather than to the mundane forms of pleasure which leave him as empty as he was before.

Now for a few comments on the contents of the March AS in order of preference: "No Medals for Captain Manning"—McGivern; best yarn in the issue. It left me wondering whether mankind hates war, or do we really like to spill each others' guts out.

"Ticket to Venus"—Jarvis; a darn good twist and a most surprising ending. Another s-f yarn following the same train of thought called "Needle" turned out into a near classical success.

"Whom the Gods Destroy"—Costello; the action was lively throughout the story's entirety, but the characters, sequence and events were etched more like what would be expected of a 1909 kinescope melodrama, with Legree chasing Little Eva over the ice floes, with villains, mad doctor, black handlebar moustache, black cape and all—even Pearl White seemed to be in this, the hero saving her from the villain and untying the ropes on her upon reaching the sanctity of safety. However, what intrigued me most was Mr. Costello's clear and very crystallic interpretation of certain basic forms of philosophy and psychology which are not found even in some of the best s-f stories today. All this practical science revolved around the central character of the story, Kirkland, who knew how to dominate other people by abruptness, showing them how inferior they were without any provocation—and most of them accepting that this was true. Basically this is known as the element of surprise, propounded by the Armed Forces during the last war and currently being used with efficacy in our present campaigns. By all means have Mr. Costello write more strongly on this subject in the future; he handled it excellently.

"You'll Die Yesterday!"—Phillips; obviously a rush job and not up to Rog's general ability...most stiff and hard to read to the end.

"Beyond the Rings of Saturn"—Williams; the theme is something that I got tired of after having read it for the third time around ten years ago. This must be the thousandth time unadulterated space opera of this type has been used. I've always felt that a special sfzine should be printed for people, if any, who go for this stuff.

"Laughing Matter"—Hickey; poor stereotyped and hackneyed plot—no care whatsoever given in this writing.

"Secret of the Burning Finger"—Jakes; cheap filler; other than that, n.c.

The last four yarns mentioned were not even up to AMAZING's average. And re-

garding the general format of AS, brother, it's been too long in this rut. When I think of sandpaper, my engrams associate it with AS' paper, and when I think of unshorned woolly lambs, I think of AS' untrimmed edges. I don't wish to sound hypercritical since for once I am not in such a mood, but I do have to battle as much as a full half minute before I can turn one of the ragged pages. Insofar as interior illos go, lessee: there's Finlay, Bok, Lawrence, Paul and other artists more familiar with s-f. But your covers are about the best to be found in the sfantasy field today. And Jones is THE artist!

Some while back, one of your astute readers offered a suggestion on running a form of contest. I, too, have an idea to offer which may not be original but might prove practical, and that is to inaugurate a contest which would allow young writers to break into the field of sfantasy writing, running both in AS and FA bi-monthly with liberal cash prizes offered to them. At the end of a certain period, say once every six or eight months, a percentage vote could be gathered from most of those who write to you, and the writer leading most in popularity could have a contract or other opportunities offered to him. I would like to know how much this would appeal to you and others.

Calvin Thos. Beck
American Science-Fantasy Soc.
7312 Blvd. East
Suite 2-C
North Bergen, N. J.

For many reasons, too long for detailed explanation here, the suggestion in your last paragraph is inoperable. We here are always on the lookout for new writers and fresh material, and the writer or writers who can furnish it does not need a contest to reap his reward. —Ed.

WATCH YOUR LANGUAGE!

Dear Sir:

I have just completed the March issue of the AMAZING STORIES. Terrific!

Laurels to Robert Gibson Jones for his masterpiece on the cover. Like so many others have stated, I, too, am a little tired of the dream damsels on the covers.

Mr. Jones has given the reader a sense of curiosity which is good for any story.

Shame, shame on Mr. John W. Jakes on the repeated use of strong profanity in his story, "The Secret of the Burning Finger." I mean after all AMAZING STORIES has reached many countries and many people of different ages. Do you think it good policy to have children as Zane Mattler reading such language. He has had the decency to complain about the covers.

As for my personal ratings on the stories, I don't claim to be a critic, but this issue the story, "Whom the Gods Destroy," by P.F. Costello was terrific and terrifying. "Beyond the Rings of Saturn," by Robert Moore Williams was very interest-

ing. "You'll Die Yesterday," by Rog Phillips, humorous and very human. "Laughing Matter," by H.B. Hickey very plausible and possible. "Ticket to Venus," by E. K. Jarvis, could have sequel to relate happenings while F.B.I. detective is on Venus. "No Medal for Captain Manning," by Wm. P. McGivern, no specific plot and no interest. Ideas not compact—just drifting. "Secret of the Burning Finger," by John W. Jakes, well plotted—very interesting, but still I am against so much profanity in such a fine book.

I guess I'd better sign off before I have trouble. But keep up the fine work. I'll keep up buying them.

Miss Doris Madison
92 7th Street
Atlanta Hotel
San Francisco, Calif.

SO MUCH FOR SEX!

Dear Editor:

Having been a science-fiction fan since I was old enough to grasp the idea of gravity, I decided that it was about time I wrote to you. You put out a fine magazine, well edited and with stories well written. Your artists are very good and your filler articles interesting. What prompts me to write is the growing concern of certain types of people, fans and non-readers alike, to criticize the, as they call it, sexy covers on your mag. (And on almost all the others).

To you narrow minded, hypocritical bigots I have a few words to say. Sex is here to stay. Sex is what makes the greater part of the world go round. If you are ashamed to buy and carry a magazine with a sexy cover then you had better look to yourself and not to others for the reasons. These reasons are undoubtedly psychological in origin and explanation, but they should be examined by all who have those feelings.

You buy a book to read it and to enjoy that reading; if the book has illustrations you also enjoy these. You do not buy the book unless you like it. Those who snicker and scoff are not to be blamed for their ignorance. In most cases it is a common type of inhibition and the wish that the scoffer had your nerve. Also most of those who avoid looking at covers of this type and call them indecent and sexy have extremely evil minds. If you cannot ignore their jibes and snickers, attempt to introduce them into the realm of science-fiction. Some of the discussions you can have are fascinating and usually you arouse their curiosity and thus recruit another member to the ever growing ranks of fandom.

Conrad Wm. T. Johnson
507 Hotel Algeo
Toledo, Ohio

The foregoing opinions are Mr. Johnson's and do not necessarily represent those of the editors. —Ed.

JUST S-Q-U-E-E-Z-E IT OUT!

By

SALEM

LANE

ONE OF the lesser known miracles of our modern machine age is the change in fabricating methods that have occurred in many kinds of manufacture. In particular, the enormous use of high-pressure presses for forging, squeezing and extruding metals, bears examination. Few people realize how many items that they use—and will use—depend on a principle best exemplified when you squeeze a toothpaste tube and watch the ribbon of paste emerge in the shape determined by the hole in the top of the tube. This same principle applies to metals, exactly!

At present, almost all metals with the exception of certain alloys of steel, can be extruded or squeezed through dies to give them a form and shape. And this can be done cold! Thus if you want an aluminum beam for aircraft wing-spars, let's say, you just squeeze it out of a huge hydraulic press as you'd squeeze a toothpaste tube! It's that easy.

The Germans, in their re-armament for the Second World War, pioneered in the use of these gigantic metal squeezers. After the war, the Soviets captured and removed the largest hydraulic press in the

world, but we also managed to get several huge ones which we've set up here in this country and they're busy turning out components for rockets and planes.

Making shell cases of steel by taking a slug of that metal and punching it a few times in a hydraulic forging press, produces a simple finished product faster than any other way. It is incredible to see a flat slug of steel squeeze up and flow around a die just like so much soft biscuit dough. But it does. Copper, aluminum, magnesium and all the other relatively soft metals flow as easily as spaghetti from extruding machines. Working steel is a little harder, but it can be done.

Some time ago we reported on a huge furnace which produced steel beams and cylinders in almost a finished form. This is another clue to the metals revolution which is taking place. All industrial efforts are tending toward making manufacturing a continuous flow process instead of a unit operation. The idea of the assembly line or continuous chain is stealing into every sort of industry from making pretzels to rocket engines!

THE END



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CAN YOU SOLVE THIS PROBLEM?

By DALE LORD

NO SCIENTIFIC phenomenon is more common than friction—nor so little understood. Friction was investigated hundreds of years ago, one of the first scientific investigations. Certain laws were formulated and certain explanations given. Yet, no one ever satisfactorily explained the real nature of friction, and now scientists are discovering that even the basic laws are only approximations! It's somewhat funny to think we know all about atomic bombs and relativity, but we don't know much about such a humble thing as friction.

Consider the basic law of frictional force. The friction is directly proportional to the load. But that isn't true except for the very limited case of extremely light loads and very slow speeds—exactly what you'd find in the average physics laboratory. In actual fact, the frictional force appears to be independent of the load and strongly dependent upon the nature of the surfaces. This knowledge comes from a study of machine tools and their action in cutting metals. Until recently, friction was believed to be caused primarily by mechanical action between the surfaces concerned. But now, that doesn't seem to be the case. Rather, friction is dependent, in some way as yet unknown, upon the inter-molecular forces (electrical in nature) between the surfaces.

A study of the techniques of metal cut-

ting has shown that if the tools are properly ground and the feeds and speeds are just right, no heat is generated either in the tool or in the work being cut! A small amount of heat appears in the chip being thrown from the machine. Perhaps even this can be eliminated by further study.

Another classical law of friction is that the force is independent of the area of contact. Modern research discloses the opposite; the force is proportional to the areas in contact. A direct contradiction to a long believed idea.

From consideration of the above problems, if you happen to know anyone who is interested in doing research in applied physics, you might suggest that he take as his field, friction. Most of the young men in the field now think of physics only in terms of super-cyclotrons and ultra X-ray machines. What is really needed, is not more cyclotron "jockeys" but men interested in truly fundamental problems such as have been mentioned.

Fortunately, the line between applied physics and engineering is getting mighty thin, and more engineers are doing actual research on these matters. This bodes well for the future. For by coincidence, it seems the vehicles of the future depend more and more on the elimination of frictional forces, whether they be caused by metal or air—as in a jet or rocket.

★ ★ ★

the ORANGE CURTAIN

By

TOM LYNCH

ONE OF Man's most persistent and irrepressible enemies outside of the rat, is the cockroach. This denizen of the insect world can endure almost anything, is repelled by practically nothing, and is extremely hard to destroy. He is exceeded in his voraciousness only by his ugliness. For a long time, scientists have been trying to dislodge him from his eminence in the pest world. Some thinkers have come to respect the power of this insect so, that they have suggested that some time in the distant future after Man has destroyed himself, the cockroach will overcome the will by sheer hardness. *Perhaps they may not be wrong!*

A mysterious agent has appeared on the side of the Humans in this never-ending war. The Osage orange tree has been known and used for a long time. Bow-makers found it highly valuable for bows, and farmers have long used it as a rough, tough hedge. The Osage orange tree also bears an inedible fruit, a little bigger than an ordinary orange and quite pulpy inside.

By chance, a scientist found that cock-

roaches cannot stand the presence of the Osage orange fruit. Simply bringing a blossom into a room infested with cockroaches, will drive them away into another room. Putting the fruit around other rooms will drive the cockroaches from the entire apartment. Exactly what the mechanism of distaste is, is as yet unknown, though it is suspected that a heavy vapor or scent emanates from the fruit and literally "tear-gases" the cockroaches away. Some volatile oil causes this no doubt.

Efforts are being made to develop concentrates and distillates of this oil. It should prove a boon to restaurant owners and those who run public establishments everywhere, for the cockroach seems to be a natural seeker of these places. A lot of effort is being devoted these days to destroying the insect world which has taken up arms against Man. And from the success of the campaign, we suspect that it will be no insect which crawls from the eye-socket of the skull of the last man on Earth. Whatever it is—it won't be an insect!

★ ★ ★

NUCLEONICS for EVERYBODY

By A. MORRIS

ATOMIC PHYSICS has become a highly popular past-time even with the kiddie-car set. We've already reported on the amazing amateur atomic laboratory equipment which is available as a toy and which contains Wilson Cloud chambers, Geiger counters, radioactive materials and all the rest of the stuff, so esoteric that you'd ordinarily think of it as a part of Brookhaven National Labs. A new device is on the horizon and will undoubtedly provide a considerable boost to amateur atomics.

It is a modification of the Wilson Cloud Chamber, that ingenious apparatus which shows us the path of atomic and electrically charged particles. The ordinary Wilson Cloud Chamber is simply a glass vessel with a bulb or some other gadget which can be expanded. Filled with water vapor, the chamber makes particles visible by having condensation occur upon the path or in the wake of the travelling particles. The trouble with the Wilson Cloud Chamber is that the effect lasts only a fraction of a minute and then must be repeated. Many phenomena have to be photographed.

The new equipment is still a cloud chamber, but it is continuous. On a tray of dry ice sits a chamber whose bottom is covered with black velvet (for contrasting visibility). The top of the chamber also is covered with a piece of black felt saturated in alcohol. When the vapors diffuse downward, they constitute a super-saturated layer of alcohol laden air, just waiting for an atomic particle to dash in and cause saturation. When this happens, of course, one sees a clear visible trail. These trails show up in a beam of light from any source, brilliantly, and they do not fade as rapidly as in an ordinary chamber.

The simplicity of construction recommends itself to any amateur scientist who would enjoy playing with atomics. And as an educational tool, the Wilson Cloud Chamber (with modifications) is invaluable. The chances are that enterprising amateur scientists are already employing the ingenious device.

Among the other equipments in atomics available to all is the enjoyable spinthariscopes—a five-dollar name for a simple little lens focused on a zinc sulfide screen in which is embedded a minute particle of a radioactive material. This fascinating gadget also permits the observation of single atomic explosions such as occur in ordinary radioactivity.

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**MEN
BEHIND
AMAZING
STORIES**

(continued from inside cover)

Kansas to make the wheat harvest. Today I think nothing of hopping a plane here at New York for Los Angeles where my mother lives, and my wife's parents. In fact, I'd better stop thinking about it or I will.

When most kids are entering college I suddenly got the ambition to go to college myself. That meant finishing high school which I had been too busy rambling to do. In order to do both I became a licensed fireman, then stationary engineer, working night shifts and going to school during the day.

I still can't remember when I slept during those years. I can remember being awakened in a math class once in college, and before that in a Spanish class in high school once.

My rambling urge again took me. I worked in a radio factory in Milwaukee, a plywood mill in Seattle, a potato-chip factory in Tulsa, or was it Enid?

Ambition overtook me again. I went back into engineering, became a chief engineer, became dissatisfied, went into power installation which enabled me to travel, and would have been at Pearl Harbor when the blow fell—except for a hunch. That hunch took me into the Puget Sound shipyards.

When the war broke in all its fury I was probably in the inner bottoms of some destroyer getting a large dose of *galvanize*, the term for a high fever produced by zinc oxide in the lungs. My personal phase of World War II

began about that time too. That was the war between the various shipyards and the draft board. At its peak I was placed in IA three times in one week. In its most bitter stage the Everett Pacific Shipyard and the draft board combined forces to get me into the army while the Lake Washington Shipyard was falsifying records to make it possible to keep me. Later on when I quit Lake Washington to work for Todd Pacific it was LW that joined forces with the draft board. And then, to me, the most interesting thing about this phase of World War II was the fact that it never got to the point of an actual physical exam, which would have placed me in 4-F in all probability.

On V-J day I bid goodbye to my days of working at mundane things. I had already tried my hand at writing enough to like it. Now I went into it in earnest.

SO MUCH for the outward manifestations. When I read it over I see that I haven't really said anything about me. I might as well have made it the autobiography of a street-car. It's the story of a peg moving around the board of life at random. To a large extent I was that—externally. I had all the qualities of a poor worker except poor work. I alternated between periods of being a conformist and being a renegade. In looking back I can see that many or most of my teachers in school understood me, but few of my bosses. Or perhaps they understood me only too well!

The basic point of incompatibility between me and existing civilization is the concept of selling time out of one's life. As a worker I could see no sense in the principle of forcing a man to stay on the job for specific hours in a state of mental stasis as



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regards all other interests. I eventually realized that the philosophy of labor is a necessary one, and that it was I who was at fault.

But before I reached that stage of understanding I had become a rebel. I could have submitted to the discipline of the armed forces because I would have realized I was a cog in a machine. I could not submit to the discipline of a job—and seldom did, taking a certain dry amusement out of making my work so good that I became somewhat indispensable in spite of the fact that I disregarded rules, and refused to look busy when there was nothing to do.

Most flagrant of all, during the few times when I myself was a strawboss, I encouraged the same pride of accomplishment and disregard of discipline in my men, so that my crews became those most obnoxious of inconsistencies: Units of men who stand at the top of the work sheet in production and at the bottom in those qualities of submission to rules deemed so much more important than production itself.

Adding all that up, I have a temperament admirably suited to writing, and writing is admirably suited to my temperament. It is results only that count in this game—and it makes no difference if those results are obtained sporadically or by consistent application to the job.

In other words, the editor doesn't refuse to take the story because I slipped out of the plant and spent half an hour chewing the fat with a pretty waitress. In fact maybe the reason he buys the story is because I bring her back with me and put her into the story! Figuratively, of course—in case my wife happens to read this.

—Rog Phillips